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Railway Age

SECOND HALF OF 1921—No. 26 NEW YORK—DECEMBER 24, 1921—CHICAGO SIXTY-SIXTH YEAR

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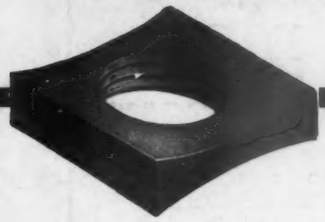

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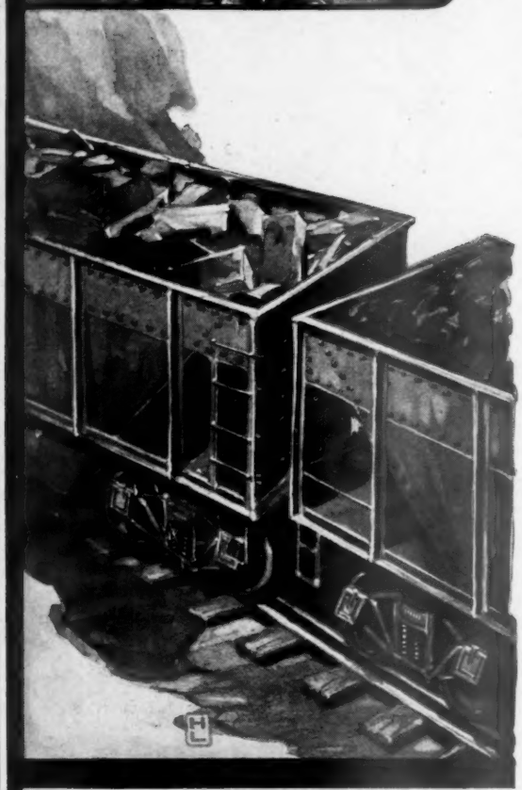

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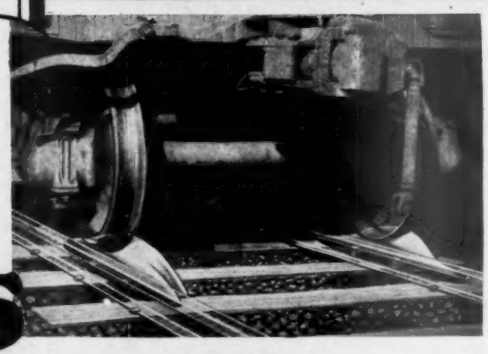

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EDITORIAL

Railway Age

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October Operating Statistics

The operating statistics for October of roads with annual operating revenues above $25,000,000 are somewhat more interesting than has been the case with the figures for previous months. The statistics in question have been issued this week by the Bureau of Statistics and appear on another page of this issue. The net ton-miles—including both revenue and non-revenue freight—for October will unquestionably show that much less traffic was handled in that month this year than in October, 1920. However, perusal of the October statistics will show that there are five roads which handled more net ton-miles in October this year than in October last year. These are the Long Island, the Louisville & Nashville, the Oregon-Washington, the Chicago, Rock Island & Pacific and the Oregon Short Line. In addition, the traffic handled by the Atchison, Topeka & Santa Fe and the Union Pacific was practically on a par with the 1920 figure. One must, of course, not grant too much importance to these details because presumably a decided falling off in traffic will be evidenced when the November totals are issued. Nevertheless, the fact that five roads in October this year had traffic in excess of, and two on a par with, that for October last year—particularly when one considers that October, 1920, was with the single exception of August, 1920, the busiest in the railroad's history—will not serve to encourage the pessimists.

C. P. R. Sells Stock in New York

The sale in the United States market of $25,000,000 Canadian Pacific consolidated 4 per cent coupon debenture stock formally announced on Monday, December 19, is worth more than passing notice. The technical name given the securities is somewhat unfamiliar, but the debenture stock is what we in the United States would call a prior lien bond. The Canadian Pacific balance sheet as of December 31, 1920, showed ordinary stock of $260,000,000; four per cent preference stock amounting to $80,681,921 and the four per cent consolidated debenture stock amounting to $216,284,882. The latter stock—or, as noted, what we would call prior lien bonds—has no maturity date. It has paid its 4 per cent regularly since its issuance in 1885. The Canadian Pacific is truly a British company as indicated by the ownership of the common stock. Of the 2,600,000 shares outstanding on March 1, 1921, 1,242,837 shares or 47.8 per cent were held in the United Kingdom; 460,838 or 17.73 per cent in Canada and 626,510 or 24.1 per cent in the United States. Insofar as concerns this coupon debenture stock, it is pointed out by the bankers that this is the first issue of the debentures which has been placed directly in the United States. Heretofore, it is noted, the road has gone to London. There is an additional point in that the stock is to be issued with coupons; hitherto the practice has been to issue the stock as a registered stock. There can be no question about the reception the stock will be given by American investors. The Canadian Pacific is truly an American railroad. Students of the American railroad situation will give due appreciation to the fact that while Canada had a heavy burden to carry during the war, the C. P. R. was excused from 26 months of government control.

Ford Proposes Simplified Reports

A press despatch under a Detroit date line appeared in last Saturday's papers as follows: "Henry Ford's railroad, the Detroit, Toledo & Ironton, which has objected to the present system of railroad reports prescribed by the Interstate Commerce Commission, has presented a simplified proposal to the commission. Ford's officials believe that adoption of the plan would save thousands of dollars to the country's railroads and at the same time be adequate for all public needs. The commission is now studying the proposal" The news in this item is in the last sentence, "The commission is now studying the proposal." The commission has been studying such proposals since 1887.

Standardizing Train Line Connectors

Probably few of the readers of the *Railway Age* outside of Canada are familiar with the extensive application of automatic connectors described in an article in this issue. The development of this device has gone on steadily for several years and the fact that the road which has the largest installation is continually equipping more cars is conclusive evidence that the connector has passed the experimental stage. As it is now coming into general use on a number of roads, the question of interchange naturally presents itself. Up to this time the designers of connectors have contented themselves with devising arrangements for interchanging with the standard air and steam hose. The time is approaching when interchange between various types of connectors must be considered. If conflicting types are developed, employees will resort to unsatisfactory make-shifts to permit cars to be interchanged. The connector performs the important function of conveying the air upon which depends the control of the train and hence the safety of its passengers. Even more important than the expense that would result from the use of varying contours for the coupling parts of connectors is the dangerous inefficiency of the brake system which such a situation would involve. This is a matter which ultimately may involve nearly 60,000 passenger cars and 3,000,000 freight cars. The magnitude of the problem makes it worthy of thorough consideration by the railroads and by the American Railway Association with a view to establishing standards for the interconnecting parts of various makes of connectors.

Support the Technical Bureaus

The Department of Commerce is a unique governmental institution in that its activities are directed primarily in furthering the interests of industry and business. The ninth annual report of the Secretary of Commerce is of particular interest because it is the first report to be made by the present secretary, Herbert Hoover. In view of the fact that the object of this department is to aid rather than to hamper business and in the light of the enormous gross appropriation for our national government, the estimated requirements for the Department of Commerce for the fiscal year of 1923, namely, $24,641,000, is indeed modest. In justifying this estimate

which is $7,051,000 in excess of the appropriation for the fiscal year 1922, the report places particular stress on the difficulties experienced because of restriction of previous appropriations. As a minor illustration, a master track scale purchased by the Bureau of Standards several years ago as an adjunct to its work of testing railroad track scales, is still of no use owing to the lack of a building in which to house it. The United States Coast and Geodetic Survey, which is responsible for the skeleton work of highly accurate surveys and levels that form the primary basis for much of the survey and map work conducted by the railroads and others, has been seriously hampered by a low salary scale in recruiting the technically trained men required for its exacting work. It is only with extreme difficulty that the high standard of its performance has been maintained. Another technical bureau, although outside of the Department of Commerce, which has suffered from the starvation policy as to salaries is the Patent office, which is now admittedly incapable of coping with the work imposed on it. The result has been to retard invention and development work and the railways and railway industries are by no means the least of the sufferers. The appropriation requirements of these technical departments, as with those of the Forest Products Laboratory previously referred to in these columns, are small as compared with allotments to activities enjoying a greater popular demand, but the business and industrial interests of the country can ill afford to see their work throttled for want of adequate support.

Net Income of Ford's Railroad Steadily Declines

REPORTS of the earnings and expenses of the Detroit, Toledo & Ironton Railroad for September and October, which have just been filed with the Interstate Commerce Commission after considerable delay, indicate that Henry Ford is learning that it is not so easy to operate a railroad at a profit as it appeared last spring. Not only has the net operating income of the road since April been less each month than in the preceding month, but for the last three months reported, which are the months since his wage increase took effect, it has been less than it was in the month during which the Ford management took charge. For the month of October it was only $15,191, as compared with $77,985 for March, when the Ford management was installed. This is in marked contrast with the showing made by the railroads generally, whose net operating income has increased almost steadily throughout the year.

The reports of the Detroit, Toledo & Ironton for September and October have been delayed while Mr. Ford's accountants have been trying to convince the commission that the amount of detailed information which the commission requires of Class I roads to report to it monthly is unnecessary. Mr. Ford has let it be known that he has some ideas on the subject of simplified bookkeeping and while he has been arguing with the commission on the subject it has gone to press with its monthly summaries for September and October covering only 200 roads instead of 201 and with a footnote saying that the D., T. & I. report had not been filed. The commission apparently, however, has let Mr. Ford understand that even he is subject to its requirements and the reports reached the files on Monday morning. Mr. Ford's reports of his railroad operations have been awaited with unusual interest because he has been going around the country giving interviews as to how he could revolutionize railroading if he were in charge of all the railroads of the country.

As has been previously shown, Mr. Ford's newspaper reputation as a railroad wizard was based primarily on the sudden jump in his net operating income for the month of April, which was nearly $200,000 greater than it was for March, as the result of the diversion of Ford tonnage to the line and an increase of $258,000 in the earnings with an increase of only $42,000 in operating expenses. These results were made public at about the same time that Mr. Ford announced an increase in wages to become effective on July 1 and a 20 per cent reduction in rates, which except as to local intrastate traffic in Ohio was suspended by the Interstate Commerce Commission. The gross earnings continued to increase for several months but the handling of increased tonnage also brought an increase in expenses, which was accentuated by the wage increase in July, and the net operating income has continued to fall ever since. For August it had been reduced to $70,643, or less than it was in March. For September it was only $46,749 and for October only $15,191, or $261,000 less than it was in April. The revenues, expenses, operating ratio and net operating income for the eight months during which the Ford management has been operating the road as shown by the reports to the Interstate Commerce Commission, have been as follows:

Month	Operating Revenues	Operating Expenses	Oper. Ratio Per Cent	Net Oper. Increase
March, 1921	$439,052	$352,970	80.4	$77,985
April	697,491	395,816	56.7	276,452
May	744,406	422,328	56.7	263,293
June	713,527	376,383	52.7	261,259
July	744,498	444,794	59.7	187,395
August	763,840	548,246	71.8	70,643
September	759,757	572,278	75.3	46,749
October	652,438	514,504	78.8	15,191

It will be noted that the increase in revenues did not keep up after August and that the expenses were somewhat reduced in October after the earnings had fallen, but that the reduction in net was in spite of an increase of $213,386 in earnings in October as compared with March. In addition to the increases in expenses, the reports show a large debit balance of equipment rents.

It is true that the D., T. & I. has made a much better showing this year than it did in 1920. For the ten months, January to October, 1921, the net operating income was $887,596 as compared with a deficit of $1,097,265 in the ten months of 1920. In this connection it will be recalled that the D., T. & I. in common with other roads had a 40 per cent increase in freight rates on August 26, 1920, and the railroads generally have been earning some return this year, in spite of a decrease of revenues, whereas they earned practically no return last year. The roads generally, however, have been gaining throughout the year up to and including October, which was their best month so far as net operating income is concerned. For the ten months' period the Detroit, Toledo & Ironton had $5,953,606 of operating revenues, an increase of $1,722,699 as compared with 1920, or 40 per cent, while the railroads generally had a decrease in earnings of eight per cent. Its operating expenses were $4,292,418, a decrease of $707,321, or 14 per cent, while the railroads generally reduced their expenses 17 per cent. The increase in the D., T. & I. earnings was entirely in freight revenue and represents just the amount of the rate increase, which, however, was also in effect in September and October last year. Passenger and other revenues decreased. In expenses most of the decrease was in maintenance, which was $470,679 less than for 1920, or 19 per cent. On the railroads as a whole the maintenance expenses were 21.7 per cent less than in 1920. Transportation expenses were reduced by $220,137, or about ten per cent. The net operating revenues for the ten months were $1,661,188 as compared with a deficit of $768,832 in 1920. Equipment rents paid showed an increase of $394,831 and the net operating income was $887,596 as compared with a deficit of $1,097,265 in 1920. As the freight revenues for the ten months were $5,701,734, a 20 per cent reduction in rates would have amounted to $1,140,000, and would have completely wiped out the net operating income unless it would

have induced Mr. Ford as a shipper to buy more transportation from his own railroad.

Mr. Ford has said in an interview that he could operate all of the railways of the United States just as well as he does the D., T. & I. Since he has reduced the net operating income of the D., T. & I. 95 per cent in six months, while the other railways of the country have been gradually improving their net returns, his statement of what he could do with the railroads as a whole can be accepted as unquestionably correct.

Concerning the Supervisory Officers

UNFORTUNATE as it is, it must be admitted that within recent years there has been a serious increase in the controversies and antagonisms between railway managements and railway employees. The labor situation on the railways was very unsatisfactory before government control. The labor policies followed by the Railroad Administration aggravated the situation by taking the settlement of almost all matters affecting labor out of the hands of the officers of the individual railways and their employees, and centralizing it in Washington. There was a large increase in the number and strength of railway labor unions, and, whatever may be said for or against the organization of labor, there can be no question that since the railways were returned to private operation this increase of unionism has increased the difficulty of establishing harmonious relations between them and their employees.

It long has been, and still is, a question whether the various classes of supervisory officers of the railways finally will identify themselves with the managements and act according to the principle that they have the full duties and responsibilties of officers, or will decide to regard themselves merely as employees and organize themselves into full-fledged labor unions and employ the methods of labor unions. This is a question of great importance, both to the railways and the supervisory officers.

The main reason why there is any doubt as to the future attitude and conduct of supervisory officers is that many of them honestly believe the railway managements have not treated the various classes of them fairly. They believe the managements have granted many concessions to organized employees because they were forced to; that in consequence many classes of employees have been treated relatively better than the supervisory officers; and that the only way the supervisory officers can get what they are entitled to is by organizing and employing similar coercive methods.

We publish elsewhere in this issue an article on the situation of the supervisory officers by J. L. Eldridge, vice-president of the Yardmasters' Association of America. Mr. Eldridge is one of the fairest and most intelligent of the leaders of these supervisory officers' organizations. He discusses principally the duties and responsibilties of the yardmasters and the way in which he feels they have been dealt with, but undoubtedly what he says expresses the views of supervisory officers of other classes. His article is temperately written and well worth reading.

The supervisory officers are the points of contact between the railway managements and the employees. They can do much to increase the efficiency of the work of the employees. They can do much to determine the attitude of employees toward the managements. If the supervisory officers are given wages and working conditions which are reasonably satisfactory to them they are sure to perform their duties and to deal with the employees in a manner which will be much more beneficial to the railways than if they are required to work for wages and under conditions which they strongly feel are unfair as compared with those of the employees below them or the other officers above them.

There is another point of great importance which should be considered in this connection. The railways should recruit a very large part of the higher officers in the mechanical, maintenance-of-way and transportation departments from the supervisory officers. Therefore they should make the wages and working conditions of these officers such as to secure and develop in supervisory positions men who will be fit for promotion, and who, when promoted, will be able efficiently to perform the duties of higher, and even of the highest official positions.

Unquestionably, mistakes have been made in dealing with the various classes of supervisory officers in the past. In many cases their wages and working conditions have been made such that they have not been attractive to men of ability and promise. The very fact that organizations which are practically labor unions have been formed among them indicates a state of mind which is far from healthy.

While there have been evidences of serious discontent among the supervisory officers, there also have been afforded in certain recent trying periods some striking evidences that the old spirit of loyalty to the railways is still dominant among them. In every instance within recent years, when the railways have had to fight strikes in their shops and yards, a large part, or even a great majority, of the supervisory officers have not only stuck to their work, but have done it efficiently, courageously, and regardless of the hours they were supposed to be on duty. Since there is nothing the railways need more than efficiency and loyalty among their supervisory officers, they should spare no reasonable effort to restore and maintain these qualities among them.

Central of Georgia

THE CENTRAL of Georgia operates 1,914 miles of line, of which 1,423 is owned, 476 is leased and 15 is trackage rights. Of the total mileage, 1,333 is in Georgia, 577 in Alabama and 4 in Tennessee. The road is one of the most prosperous in the South; it has paid the six per cent on the cumulative preferred regularly since that stock was issued in 1912 and has maintained a rate of five per cent on its common stock since 1913. All of the stock of both issues is owned by the Illinois Central. The latter in 1920 received dividends on its Central of Georgia stock amounting to $900,000 on the $15,000,000 preferred and $249,925 on its $5,000,000 (or to be exact $4,998,500) common.

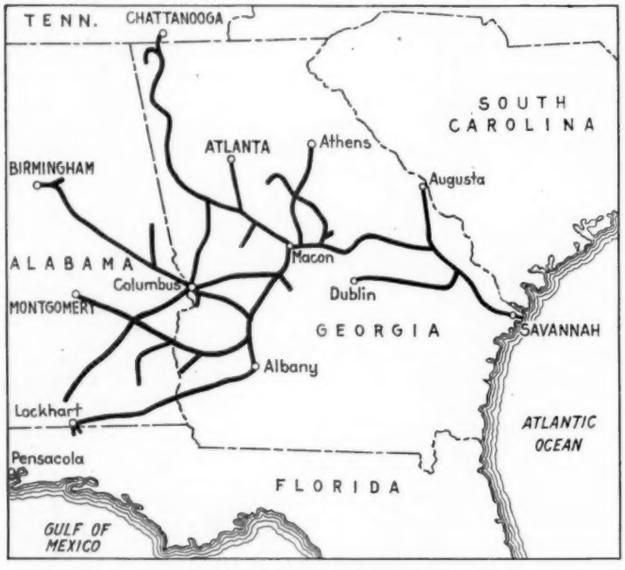
The fact that the Central of Georgia is controlled by the Illinois Central is of great importance outside of the income which is brought to the parent company. The Illinois Central system by its control of the Central of Georgia is given access to southeastern Alabama and central Georgia as well as an outlet at the important port of Savannah. The fact that the Illinois Central's high standards of operation and service are reflected in the activities of the Central of Georgia is further a factor of no small importance to the territory which the latter serves.

Dividend Income Makes Big Difference in 1920.—The Central of Georgia's line into Savannah is the leading line serving that port. The Ocean Steamship Company which operates out of Savannah to New York and Boston is controlled through ownership of the entire stock. For a period of years the steamship company has been paying regular dividends of 16 per cent and in addition extra dividends from time to time. In 1920 an extra dividend of 40 per cent was paid, the railroad company receiving $799,640. The Central of Georgia owns also a majority of the stock of the Wrightsville & Tennille, all of the stock of the Wadley Southern and one-half that of the Western of Alabama. In 1920, as shown in the income account which appears on another page of this issue, the Central of Georgia had a net corporate income of $1,516,707 as compared with $1,282,650

in 1919. The 1920 income included the standard return for January and February, the last two months of federal control, and the guaranty for the guaranty period. It will be noted, however, that in 1920 there was an item of dividend income of $1,477,826, or $1,031,654 more than in 1919.

Record Traffic in 1920.—Insofar as railway operations alone were concerned, 1920 was not a very successful year. The road handled a record traffic. It carried 7,517,302 tons of revenue freight. Its revenue ton-mileage was 1,283,298,476 which compared with a figure for 1918, the best previous year, of 1,143,774,783. The net railway operating income for the year as reported in the December, 1920, monthly statement to the Interstate Commerce Commission was but $23,969. It was only as a result of the good earnings of the last two months of the year that a net operating deficit was avoided. The standard return based on operations for the three years ended June 30, 1917—which figure we introduce by way of comparison—was $3,450,903. In 1918 the road had a net railway operating income of $3,894,069; in 1919, $1,551,954.

Results to Date in 1921.—Inasmuch as the figures for 1920 are now several months old, we are interested rather



The Central of Georgia

more in the figures for 1921 insofar as they are available. We find first that the road's traffic has held up rather well during the year. The latest figures available are those for the ten months ending September 30. In the first ten months of 1921 the net ton-miles carried—including both revenue and non-revenue freight—were 1,108,439,000 as against 1,226,087,000 in the same period of 1920. The two lowest months in 1921 were August and September; October was much better than either of these months. Insofar as concerns earnings, figures are available for ten months. The gross to the end of October, 1921, was $18,835,161 as compared with $21,169,584 in the first ten months of 1920. The net railway operating income for the first ten months of 1921 was $1,036,317 as compared with a deficit to the end of October last year of $1,159,912. It has been noted that from the standpoint of traffic August and September, 1921, have shown a falling off in traffic. On the other hand, the net railway operating income in September was considerably in excess of that of any other previous month except July. It totaled $249,217. The net in October was $424,844. For that month the road had an operating ratio of 75.6; for the first ten months of 1921, of 90.6. The transportation ratio in October was but 36.05.

Diversified Traffic.—The Central of Georgia's traffic is rather diversified. In 1920 products of agriculture made up 14.92 per cent; products of animals, 1.38 per cent; products of mines, 28.33 per cent (bituminous coal 20.38 per cent); products of forests, 16.32 per cent; and manufactures, 31.34 per cent. In view of this diversification and the present more optimistic attitude of the South, it is a bit difficult to understand the reason for the falling off in traffic in August and September; but the figures of net railway operating income which have been given, as also the operating ratio of 75.6 for October, indicate that the road has its situation in hand. Plainly, it should evidence continued improvement in following months.

Some Operating Statistics.—The Central of Georgia in its 1920 annual report shows a figure of "tons of freight carried per revenue freight and mixed train-mile." The figure given for 1920 is 487.43, this comparing with figures for previous years as follows: 1916, 343.61; 1917, 370.85; 1918, 388.75; 1919, 467.19. This increased train loading is noteworthy. In the first nine months of 1921, in spite of the falling off in traffic, the road had secured an average of net tons per train of 476. During 1920 the road secured seven new Mountain type locomotives; at the end of the year the tractive effort of all locomotives was 314,938 lb. in excess of what it was at the end of 1919.

A progressive increase has taken place in car loading similar to that in train loading. The figure for 1920 was 24.74; in 1916 it was 19.74. For the first nine months of 1921 an average of 23.9 has been maintained. During a part of 1921 the Central of Georgia showed a rather large percentage of bad order cars. Whereas the average for 1919 was but 5.2 per cent or for 1920 but 5.4 per cent, in May, 1921, it averaged 22.1 per cent. The bad order car situation has since been taken in hand. The percentage on November 15, the latest date for which figures are at this writing available, was 14.1 per cent. The average for the country on November 15 was 14.4 per cent.

New Books

Coal Manual. F. R. Wadleigh. 184 *pages,* 4½ *in. by* 6 *in. Published by the National Coal Mining News, Cincinnati, Ohio.*

Numerous books dealing with the subject of fuels and coal have been issued from time to time, but they usually have been written from the technical viewpoint of the engineer or chemist, or to meet the needs of the man in charge of power plants or locomotives. Few books have been available, however, which gave in a concise and accurate manner the general elementary information desired by a large number of men, such as purchasing agents, storekeepers and others who are more or less interested in some phase of the coal question other than that of actual mining. This manual has been prepared by a man who evidently knew his subject and in addition recognized the wants of the men for whom he was writing.

The subject matter has been well arranged and by the use of frequent subheads and an excellent index any information desired can be found readily—features which will increase the usefulness of the book for reference purposes.

Among the subjects covered are: kinds and commercial grades of coal; information in regard to the location of coal fields and the essential differences in the character of coal from various fields and seams; the preparation of coal; coke and gas manufacture; the use of coal in locomotives, stationary boilers and furnaces; storage and prevention of spontaneous combustion; specifications and their use; analyses and effects of various impurities, together with a brief bibliography on the subject of coal.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.*]

A Question of Priority

SAULT STE MARIE, Ont.

TO THE EDITOR:

The enginehouse built at Hornepayne, Ont., by the Canadian National, as described in the *Railway Age* of November 26, is a duplicate in general design of the enginehouse in the Algoma Central terminal at Sault Ste. Marie, built in 1912 by the writer. This enginehouse was described in the *Railway Age Gazette* of October 16, 1914, and the general idea covering this locomotive house is original on this railway. This house was designed by P. L. Battey, then chief engineer of the industrial department of the Arnold Company, in conjunction with the writer, and was constructed by the Arnold Company, acting as general contractors in the construction of the terminal buildings of the Algoma Central terminals at this point.

R. S. MCCORMICK,
General superintendent and chief engineer,
Algoma Central & Hudson Bay.

The Interior Treatment of Boiler Waters—A Criticism

CHICAGO.

TO THE EDITOR:

The article with the above title which appeared in the *Railway Age* of November 12, page 935, and so appropriately illustrated on page 936, can be understood by reference to the editorial page which helps to explain its meaning. But it is a step backward. It reads like a paper of 20 years ago, and there has been much progress since then.

Today there is no more controversy between the advocates of water treating plants and of boiler compounds than there is between the advocates of locomotives and of mules. We are all advocates of each in its place. Where water is 12 grains per gallon hard, or more, railway water engineers advise water treating plants to keep scale out of boilers, if there is money to build them and ordinary traffic to use them, and in the meantime use soda ash or a boiler compound to keep the scale soft. Every honest boiler compound man advises the same thing.

Nor is there controversy as to the relative costs of using hard water alone, hard water with soda ash or an anti-scale compound, or water treated before use. Hard water alone is very costly in use; a good anti-scale compound used with such water saves much more than it costs; and a complete set of water treating plants will pay for themselves every year over and above all the good that the best anti-scale compound can do. This has been proved on several railroads during the past ten years.

The two expressions to which the author of the paper takes exception, "A boiler is designed to produce steam, not chemical reactions" and "The only thing to put into a boiler is pure water," are not to be criticised lightly. They are classics in the creed of the American Railway Master Mechanics' Association. They were first used by that association in 1871—just 50 years ago—in the report of the Committee on Better Water for Locomotives; they have never been rescinded by that association nor any of its committees, and they are still the guide to intelligent work on the improvement of boiler water. They were used in a discussion of the advantage of softening hard water before it went to the boiler; they referred only to what are now called anti-scale compounds and ought not to be quoted in a paper devoted mostly to the value of anti-foam compounds.

Twenty years ago it was commonly said, as now by this author, "Water softening consists of adding lime and soda ash to the water, which is then allowed to stand until chemical reaction has taken place." Nowadays all experienced men say "Water softening consists of adding lime and soda ash to the water, which is then *stirred* until chemical reaction has taken place."

Twenty years ago it used to be said "an increased tendency to foam is characteristic of all water treated with soda ash." Nowadays we know that the tendency of most treated waters to foam is caused by the sludge in the boiler—the flocculent precipitated limestone, the last three grains per gallon of calcium carbonate which most treating plants do not precipitate from cold water but which the heat of the boiler precipitates at once. But this sludge is not left by the soda ash treatment but by the lime treatment.

The amount of sludge left in a boiler by well-treated water is so much less than that produced by the action of soda ash or any other anti-scale compound on the hard water inside the boiler that, in treated water districts, the amount of anti-foam compound used is usually much less than that previously used.

All this ancient talk of sodium salts causing foaming started from a test once made of the value of soda ash to precipitate incrusting matter from the water and to loosen the scale already in the boiler. When a certain amount of sludge and of fine scale had been set loose, the boiler began to foam; and because it happened that the soda ash then in the water amounted to 200 grains per gallon, it was announced that 200 grains of sodium salts per gallon of water in a boiler would cause foaming. But I can show you boilers fed with water containing sodium salts but no limestone, in which the concentration of sodium salts usually amounts to 1,000 grains per gallon and in which there is no sign of foaming.

The object of an anti-scale compound is not to put sludge in the boiler bottom but merely so to act on the water as to cause a deposition of soft scale instead of hard scale. If sludge is deposited so that the boiler foams, too much compound is being used. And since soda ash is more than twice as effective as any of the compounds of which it forms a part, less of it should be used if foaming is to be avoided.

Much is made by this author and others of the fact that the use of anti-foam compound reduces the frequency of boiler washing, and of course at less expense. But I believe that any experienced boiler man will say that it is an expensive saving. The real charges in boiler maintenance are not on account of washing or of any roundhouse expense, but on account of the deterioration of the metal of the boiler. The ends of the flues in boilers which are washed frequently last much longer than those in boilers in which washing is skimped. Furthermore, on roads where water is free from acid, pitting takes place only in waters carrying sodium sulphate or sodium chloride, and at a rate determined by the amount of these materials; and it is evident that if such water is not changed with some frequency concentration of these salts will take place and increased pitting will follow.

Lastly, there is no such thing as boiler water of "too high purity." These waters of imaginary too high purity are merely waters from vegetation districts, containing little mineral matter but a small amount of organic acid; or, in

the case of distilled sea water, containing a little magnesium chloride which under the heat of the boiler soon becomes magnesia and free hydrochloric acid.

I quote you again the guiding principle laid down by the Committee of the American Master Mechanics' Association of 1871-3, and still adhered to by its successors. "Get, if possible, a supply of clean, soft, natural water." "If a natural supply of soft water is not available, the only way to prevent incrustation and corrosion is to purify the water before it enters the boiler. and the accomplishment of this result will be the *'ne plus ultra'* of this important subject."

C. H. KOYL,
Engineer Water Service, Chicago, Milwaukee & St. Paul.

The Public's Right to Steel Cars

NEW YORK CITY.

TO THE EDITOR:

A great hue and cry has been raised down in Philadelphia because of the use of wooden coaches on the Newtown branch of the Reading. An outburst of this sort naturally follows an accident such as that at Bryn Athyn, but the unreasoning virulence of the Philadelphia papers on the subject of the wooden car calls for an answer.

Wooden cars taken out of service have practically no market value, whereas used in trains they earn the same revenue for the railroads as steel cars, and that with considerably less interest charges. These cars can be economically replaced by steel cars only when unfit for further service. Is the railroad's income from the Newtown branch sufficient to pay operating expenses, fixed charges, a reasonable return to capital, the carrying charges on all-steel equipment and, in addition, interest charges on serviceable wooden cars thus relegated to the scrap heap? I should guess the contrary.

Passengers are riding in wooden cars because they, as a whole, are not paying for all-steel equipment. If citizens of Pennsylvania want to ride in steel cars, how about having their state government buy the necessary equipment and reimburse itself by taxation? The people would be paying for modern equipment and would have a right to expect it. They have no such right now. FAIR PLAY.

Practical Questions About Steam Locomotive Operation

NEW YORK CITY.

TO THE EDITOR:

There seems to be a lot of necessary missionary work to be done among our steam locomotive friends. I refer rather generally to the exponents of the steam locomotives including apparently some of your own staff. The following statement commenting on the super-power survey report appeared in the November 26 issue of the *Railway Age*, page 1019: "An efficient modern locomotive uses about 2.5 lb. of coal per horsepower hour while working. Standby losses, firing up, etc., increases this to 3.1 lb."

I often wonder if the chap that wrote the script expected it to go down with one swallow. Personally, I recall the information published by the Pennsylvania Railroad covering a test plant run with a special hand-fired set-up on one of their modern locomotives. The information was based on the supposed relative rating of the locomotive when stoker fired. What I wish to bring out are answers to the following questions:

If we are to base our locomotive ratings on 2½ lb. of coal per horsepower hour:

1. How are we to instill in the average locomotive crew the skill and supervision of the test crew of the locomotive testing plant?
2. How can we arrange to have all of our locomotives constantly loaded, up and down hill?
3. How can we insure that all locomotives will be loaded at the most efficient rating at all times?
4. How can we convince all of the motive power officials to accept the constant cut-off and other mechanical details developed by the Pennsylvania Railroad?
5. How can we manually fire a locomotive of this size and compete with a stoker?
6. If we put on two firemen, how much additional coal could we purchase with the wages of the second man?
7. How are we to maintain a steam locomotive constantly in 100 per cent operating condition with respect to valve motion, leaky valve rings, and leaky piston rings?

I might add innumerable other things. I mention the above as some of the details which your editorial writer has no doubt forgotten or overlooked. The figures given in the super-power report may or may not be wrong, but even granting that they are wrong, I feel that the error is not one so glaring as your *Railway Age* writer would have us believe. A mechanical engineer who has been designing steam locomotives for over 20 years states that 4 lb. of coal per horsepower hour is a very good figure indeed.

While the matter is still in mind, I would like to inject another thought into the argument. That is, after the details are threshed out and before everybody is tired of reading the "hot air" and opinions of all kinds, let someone rise up and drive home the fact that had the so-called American Railway Association, particularly the Mechanical Division, been on the job as it should have been years ago, such a situation as we now have before us could not have possibly come about. If you can persuade some of your "big guns" in the editorial field to come out good and hard and follow it up with some well-placed criticism of the conspicuous apathy with which the average S. M. P. and some of the other folks higher up seem to have toward this subject and you can succeed in arousing the same amount of interest in this phase of the work as you already have in other phases, I am sure that untold benefit will result to the railroads in general and to a lot of individuals in particular. ELECTRICAL ENGINEER.

Railroad Statistics

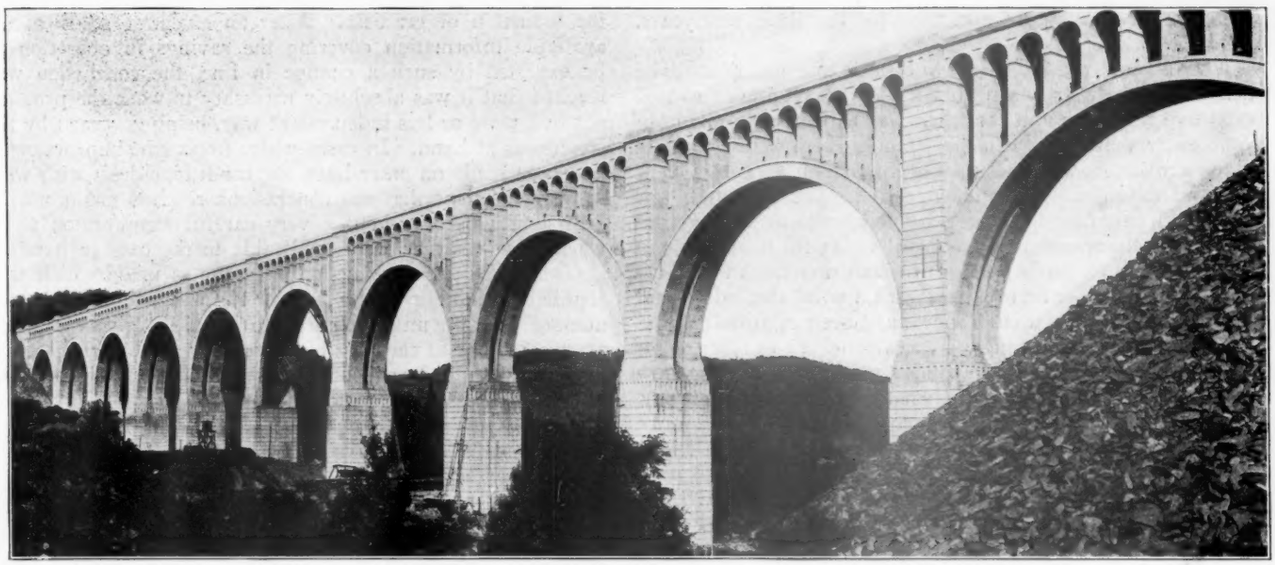
ST. LOUIS, MO.

TO THE EDITOR:

Statistics are compiled showing the sources of income and the channels of expenses. An equal interest in both is paramount to a healthful situation. These statistics should be used to the greatest advantage looking toward greater sources of revenue and economies in operation.

Many know the extent of the earnings, but I dare say few realize the magnitude of the expenditures—where the money goes after it is earned. The figures are rarely published in an understandable way. These facts may be learned through operating statistics now compiled, if advantage is taken of them. Aside from this, they are valuable analysis of existing conditions but furnish little information as to what would happen under different conditions.

The predetermination of operating results, which is most important from the standpoint of orderly and improved operation, is largely dependent upon the researches of the individual and a co-ordinated organization. Vast numbers of both related and unrelated figures are compiled, but they are not a panacea to the solution of general problems. A statement of the expenses under fixed conditions will not ultimately suffice, but the rate of change of expenses under certain varying conditions, such as trainload and speed, is needed. If such data were available, the study and analysis of operating results would be made more truly a diagnosis, rather than a post mortem C. D. HICKS.



The Tunkhannock Viaduct on the Clarks Summit-Hallstead Line

Justifying Expenditures for Grade Reductions*

Clarks Summit-Hallstead Line of the Lackawanna Fully Warranted by Operating Results

By George J. Ray
Chief Engineer, Delaware, Lackawanna & Western

THE OLDER PORTIONS of the Delaware, Lackawanna & Western, like many of the other railroads built through rough country in the early days, were constructed with many sharp curves and heavy grades. The main line crosses the Pocono mountains at an elevation of approximately 2,000 ft. above sea level. At Scranton, in the center of the anthracite coal fields, where much of the railroad's traffic originates, the elevation of the main track is about 735 ft. above sea level. Scranton is a terminal point for both passenger and freight service. The distance from Scranton to Hoboken, the eastern terminal, is now 135 miles. The middle operating division extending from Scranton west to Elmira had a length of 119 miles prior to the completion of the Clarks Summit-Hallstead cut-off. The first 50 miles west of Scranton to the New York state line was built in the early fifties. The western end of the road from Binghamton to Elmira was constructed in the early eighties with fairly good alinement and a maximum grade of approximately 13 ft. per mile.

The topography of the country in the vicinity of Scranton is such that heavy grades are required for both east and westbound traffic from that point. The lowest available summit westbound is approximately 500 ft. above the tracks at Scranton and is so located that a 1½ per cent grade is necessary from Scranton to this point which is known as Clarks Summit. For 40 miles west of Clarks Summit the old line traversed a very broken country approximately at right angles to the water sheds, with the result that the line was built with heavy grades against both east and westbound movement as indicated by the profile, Fig. 1. These grades consisted of two stretches of uncompensated 65-ft. grade and one 46-ft. grade against eastbound movement, one 21-ft. and one 28-ft. grade against westbound movement.

As the tonnage increased this line became more and more difficult to operate. It will readily be seen that where an engine handled full tonnage over the line between Hallstead and Elmira, either east or westbound, pusher service was necessary on that part of the line between Hallstead and Clarks Summit. Because of unbalanced traffic, the great variation between the east and westbound pusher grades, and of a very bad tunnel at one summit east of Nicholson, pusher engines could not be used economically. As a result a very low mileage for the pusher engines was obtained. Not only was it necessary to push freight trains both east and west, but it was also necessary to use puller engines on passenger trains eastbound between Nicholson and Clarks Summit.

Through this same territory the old line was very crooked, the total amount of curvature in the 41 miles between Clarks Summit and Hallstead being 3,845 deg. Four to six degree curves predominated.

Transportation Problems

The net tons of coal and freight handled by the Lackawanna in 1910 amounted to approximately 21,750,000. The total number of passengers handled was 26,243,000. All anthracite coal westbound from Scranton, whether going over the main line to Buffalo or to Syracuse and Lake Ontario, passes over this line as does all eastbound tonnage originating west of Scranton. Fig. 2 shows the net tons of freight and coal carried per year from 1900 to 1920, inclusive. The broken line represents the actual tonnage carried; the dotted straight line indicates the average increase from 1900 to 1909. This line extended was used as a basis of estimating probable future tonnage. It will be noted that the estimated tonnage fits the actual in 1910, but was

*Abstracted from a paper presented before the Western Society of Engineers, Chicago, December 15, 1921.

high for the later years excepting for the three war years, 1916-17-18.

The old line was expensive to operate and maintain. The heavy tonnage over sharp curves and heavy grades caused extensive rail wear and the track was expensive to maintain from every standpoint. In the 40 miles there were 29 public grade crossings, which could be eliminated only at a very material expense. The problem to be solved therefore was one which required the best possible alinement with grades over which increased tonnage could be handled and at the same time reduce pusher service in both directions to the utmost. The tonnage had reached such a point that additional main running tracks would soon have been required on the heavy grades in order to avoid excessive delay to fast freight and passenger trains due to the long time required for slow freight trains to get over the road. Additional passing tracks would not have solved the trouble and would only have caused additional delay to slow freight. To build additional tracks along the old alinement would have been expensive, and the construction would have greatly interfered with traffic. Incidentally the construction of a new line would provide an up-to-date roadbed and eliminate all grade crossings. Study demonstrated that it was impossible to locate a new line which would be a big improvement as to curves, grades, etc., without encountering very heavy construction.

Thirteen feet per mile was fixed as the maximum grade against westbound movement, in order to eliminate the pusher service westbound and permit full tonnage to be

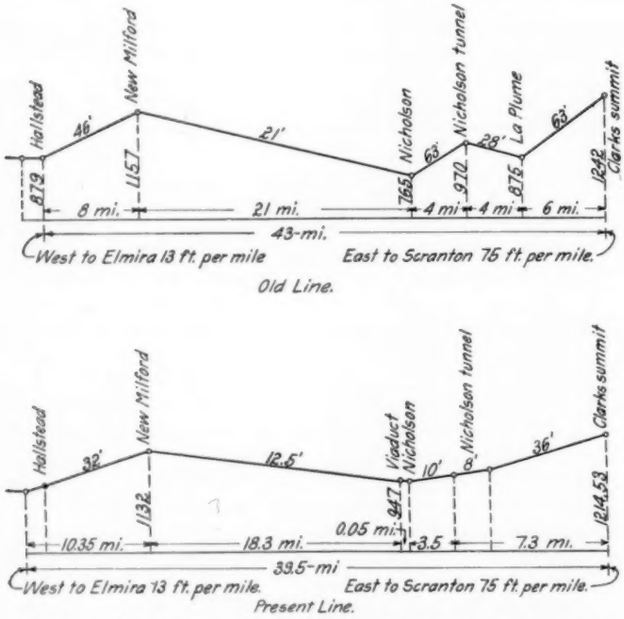


Fig. 1. The Profiles of the New and Old Lines Compared

handled west over the entire division. The eastbound pusher grades were determined by actual test on other parts of the line where it was possible to pick out a grade on which the required tonnage could be handled with one engine and a pusher (See Fig. 3.) Grades were compensated for curvature by using 0.03 per cent per degree of curve. This allowance was used for curvature on a change of line made at another point on the road in 1908 and proved to be about the correct allowance.

After the surveys had been completed and the estimates prepared for the various proposed lines, extensive calculations were made to determine the probable saving to be expected in operation and maintenance costs due to the reduction of distance, elimination of curvature, rise and fall, and the reduction of gradient. After an extended study of all available information covering the savings in operation to be expected by such a change in line, the conclusion was reached that it was absolutely necessary to work the problem out in a more or less independent way, being governed by the conditions at hand. In cases where important improvements had been made on other lines, the conditions dealt with were so very different that the conclusions reached could not be consistently used without a very careful examination as to whether or not they were applicable to the case in hand.

Grade. Where a reduction in grade is made which will enable an engine to pull a heavier train and thus reduce the number of train miles required to handle a given tonnage, we must arrive at the possible saving due to the elimination of one train. It is evident that the elimination of one train

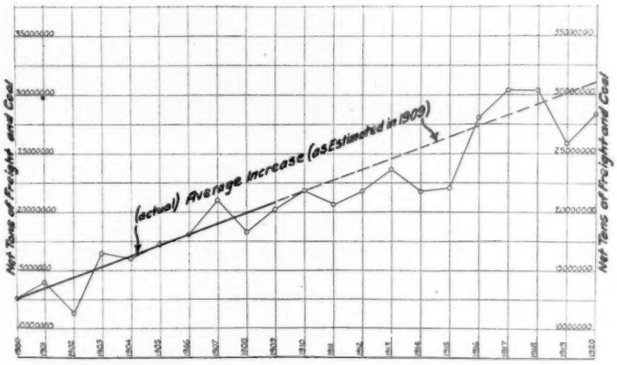


Fig. 2. The Actual Traffic in the Years 1909 to 1920 as Compared with the Estimated Growth of Traffic

in handling a given tonnage will entirely eliminate certain expenditures such as coal for fuel and wages of enginemen and trainmen. The wear on the rail, ties, ballast, and other track materials, will be less because of eliminating the engine. On the other hand such items of expense as superintendence, cost of traffic department, floating equipment, etc., will in no way be reduced by the change.

Distance. In like manner the reduction of one mile in distance will eliminate one train mile for every train run, hence we must calculate the probable saving due to the elimination of one mile in distance. It is also evident that the cost of maintaining one mile of track is eliminated and likewise the trainmen's wages.

Pusher Engines. Where the grade is reduced so as to reduce the number of pusher engines, our problem is to calculate the saving due to the elimination of one pusher-mile.

Curvature. The total value of reducing curvature cannot be readily reduced to a basis of dollars and cents, but some features of the value of curve reduction such as rail wear can be determined fairly accurately. In order to arrive at a fair value for the elimination of curvature it is necessary to make a comparison of known conditions on the various parts of the line where the general operating conditions are the same. In a general way the amount of rail wear due to curvature on any given territory depends upon the total curvature and not so much on the degree of the curves. In other words the total rail wear due to 30 deg. of central angle in a mile of level track will be about the same whether the curvature consists of 500 ft. of 6 deg. curve or 3,000 ft. of 1 deg. curve. What is true with respect to rail wear is also more or less true with all other items of roadway expense affected by the elimination of curvature. Damage to equipment and loss and damage to freight due to curvature is greater with sharp curves, but in general the additional wear on rolling stock due to curvature depends, like the

track, on the total degree of curvature and not on the degree of the curves.

Since all items of the accounts making up operating expenses are based on the average alinement (in the case under consideration 50 min.), for convenience the estimated savings due to elimination of curvature are based on the comparison of a mile of 5-deg. curve and the same amount of 50-min. curve.

Rise and Fall. The elimination of rise and fall will reduce the cost of operating a given train over the road. In estimating the savings to be expected by eliminating rise and fall we have considered that the resistance on a 0.5 per cent grade is just double the resistance on straight level track. Therefore, an engine would have to overcome the same resistance in pulling a load up a 0.5 per cent grade a mile long as it would on a two-mile stretch of level track. It is easy to see that it will cost something to move the train from the hump a mile down a 0.5 per cent grade.

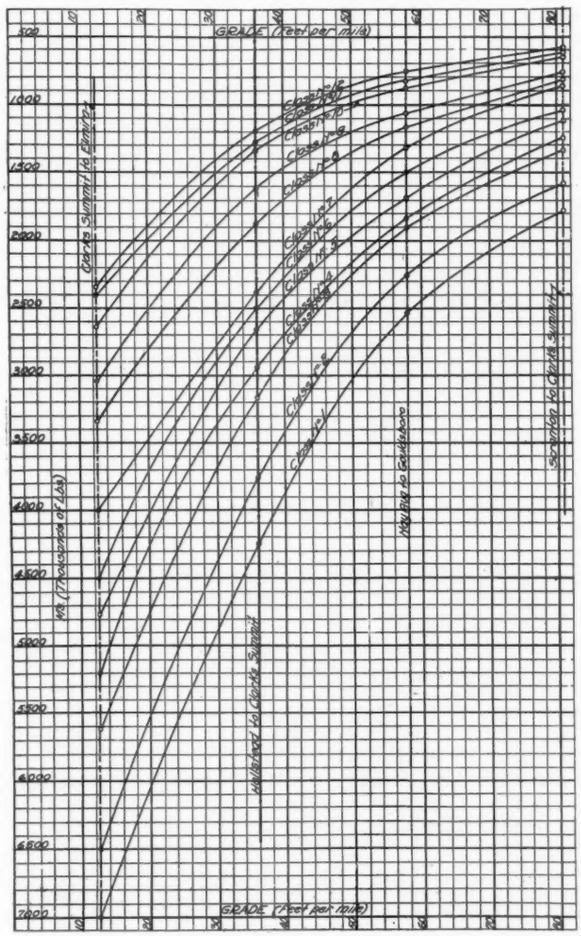


TABLE I—EFFECT OF CHANGES IN GRADE, CURVATURE, DISTANCE AND RISE AND FALL ON MAINTENANCE AND OPERATING EXPENSE

Item	1920 maintenance and operating expenses		Grade		Distance		Helper		Curvature	
	Amount	Per cent of total	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile
Maintenance of Way										
Superintendence	$406,934.91	.55	...	...	...	...	...	...	...	...
Roadway maintenance	1,084,379.54	1.50	...	..	100	150	...	...	...	...
Tunnels and subways	25,897.40	.35	...	...	...	...	...	...	...	...
Bridges, trestles and culverts	315,408.54	0.44	...	...	100	044	...	...	...	...
Ties	729,600.93	1.01	12	12	100	101	09	09	50	51
Rails	503,980.68	.69	12	09	100	069	09	06	400	276
Other track material	500,684.82	.59	12	09	100	69	09	06	200	138
Ballast	272,820.57	.58	12	05	100	038	09	04	30	11
Power lines, poles and fixtures	1,064.19	.00	...	...	...	...	...	...	...	...
Track laying and surfacing:										
Applying	1,073,389.55	1.48	12	17	100	148	09	13	100	148
Track maintenance	1,709,821.70	2.33	20	47	100	233	15	35	100	233
Track service	120,007.67	.17	25	04	100	17	12	02	100	17
Other expenses	2,842.08	.01	...	...	100	01	...	...	...	...
Right of way fences	56,900.55	.08	...	...	100	08	...	...	...	...
Snow and land fences, snow sheds	6,266.22	.01	...	...	100	01	...	...	...	...
Crossings and signs	173,732.59	.24	...	...	100	24	...	...	...	...
Miscellaneous structures	255.53	.00	...	...	100	...	...	...	...	...
Station and office buildings:										
Hotels and restaurants	4,029.23	.01	...	...	...	...	...	...	...	...
Other stations and office buildings	652,683.61	.90	...	...	...	...	...	...	...	...
Roadway buildings	33,022.54	.05	...	...	100	05	...	...	...	...
Water stations	94,652.00	.13	...	...	...	...	...	...	...	...
Fuel stations	93,999.43	.13	...	...	...	...	...	...	...	...
Shops and engine houses	353,187.04	.48	...	...	...	...	...	...	...	...
Wharves and docks	310,436.04	.43	...	...	...	...	...	...	...	...
Coal and ore wharves	69,138.29	.10	...	...	...	...	...	...	...	...
Gas producing plants	6,337.38	.01	...	...	...	...	...	...	...	...
Telegraph and telephone lines	145,460.97	.20	...	...	25	05	...	...	...	...
Signals and interlockers	660,224.74	.90	30	27	50	45	25	23	...	...
Power plant buildings	7,592.27	.01	...	...	...	...	...	...	...	...
Power distribution systems	52,027.38	.07	...	...	...	...	...	...	...	...
Power transmission systems	15,755.76	.02	...	...	...	...	...	...	...	...
Power sub-station buildings	7.48	...	...	...	...	...	...	...	...	...
Under ground conduits	1,502.60	...	...	...	...	...	...	...	...	...
Paving	566.45	...	...	...	...	...	...	...	...	...
Roadway machines	38,468.74	.05	...	...	50	00	...	...	...	...
Small tools and supplies	120,281.26	.17	15	02	100	17	11	02	100	17
Removing ice, snow and sand	485,353.46	.66	...	...	50	33	...	...	...	...
Assessments for public improvements	7,143.00	.01	...	...	...	...	...	...	...	...
Injuries to persons	68,168.25	.09	75	07	50	05	50	05	...	...
Insurance	19,172.05	.03	...	...	...	...	...	...	...	...
Stationery printing	23,845.22	.03	...	...	...	...	...	...	...	...
Other expenses	14,405.09	.02	...	...	...	...	...	...	...	...
Maintaining joint tracks and facilities	23,193.97	.03	...	...	...	...	...	...	...	...
Maintenance of equipment										
Superintendence	332,792.94	.45	...	...	...	...	...	...	...	...
Shop machinery	508,601.08	.70	25	18	50	35	25	18	...	...
Power plant machinery	167,021.90	.25	...	...	...	...	...	...	...	...
Steam locomotive repairs	6,350,455.37	8.70	62	539	80	696	46	400	30	261
Depreciation	587,004.93	0.82	62	051	80	066	46	64	30	25
Retirements	20,658.83	.03	62	02	80	02	46	01	30	01
Freight train cars: Repairs	5,716,524.94	7.83	...	...	65	509	...	...	20	157
Depreciation	1,534,966.51	2.11	...	...	65	137	...	...	20	42
Retirements	73,533.17	.10	...	...	65	07	...	...	20	02
Passenger train cars: Repairs	1,062,411.03	1.46	...	...	75	110	...	...	20	29
Depreciation	158,783.69	.22	...	...	75	17	...	...	20	04
Retirements	46,458.82	.07	...	...	75	05	...	...	20	01
Floating equipment: Repairs	2,506,661.05	3.44	...	...	...	...	...	...	...	...
Depreciation	132,645.01	.19	...	...	...	...	...	...	...	...
Retirements	23,596.91	.03	...	...	...	...	...	...	...	...
Work equipment: Reports	228,333.46	.32	15	05	60	19	09	03	20	06
Depreciation	41,845.12	.06	15	01	60	04	09	01	20	01
Retirements	4,340.38	.01	15	00	60	01	09	00	20	00
Miscellaneous equipment: Repairs	19,787.11	.03	...	...	...	...	...	...	...	...
Depreciation	.....	...	...	...	...	...	...	...	...	...
Retirements	.....	...	...	...	...	...	...	...	...	...
Injuries to persons	56,631.64	.08	...	...	...	...	...	...	...	...
Insurance	36,950.96	.05	...	...	...	...	...	...	...	...
Stationery and printing	31,579.53	.04	...	...	...	...	...	...	...	...
Other expenses	14,107.11	.02	...	...	...	...	...	...	...	...
Traffic										
Superintendence	275,349.20	.39	...	...	...	...	...	...	...	...
Outside agencies	473,297.87	.65	...	...	...	...	...	...	...	...
Advertising	67,652.91	.09	...	...	...	...	...	...	...	...
Traffic associations	93,586.54	.13	...	...	...	...	...	...	...	...
Fast freight lines	17,358.46	.03	...	...	...	...	...	...	...	...
Industrial and immigration bureaus	19,299.34	.03	...	...	...	...	...	...	...	...
Insurance	300.29	...	...	...	...	...	...	...	...	...
Stationery and printing	138,925.65	.19	...	...	...	...	...	...	...	...
Other expenses	303.79	...	...	...	...	...	...	...	...	...
Transportation: Rail line										
Superintendence	659,139.28	.90	...	...	...	...	...	...	...	...
Dispatching trains	275,486.95	.38	...	...	...	...	...	...	...	...
Station employees:										
Agents, clerks and attendants	3,090,059.45	4.23	...	...	...	...	...	...	...	...
Labor at stations	3,957,961.23	5.40	...	...	...	...	...	...	...	...
Weighing, inspection and demurrage	1,640.15	...	...	...	...	...	...	...	...	...
Coal ore wharves	234,785.45	.38	...	...	...	...	...	...	...	...
Station supplies and expenses	142,264.78	.20	...	...	...	...	...	...	...	...
Yard masters and yard clerks	1,261,448.83	1.73	...	...	...	...	...	...	...	...
Yard conductors and brakemen	2,210,493.30	3.03	...	...	...	...	...	...	...	...
Yard, switch and signal tenders	119,632.33	.17	...	...	...	...	...	...	...	...
Yard enginemen	1,445,344.04	1.98	...	...	...	...	...	...	...	...
Fuel for yard locomotives	1,392,955.39	1.91	...	...	...	...	...	...	...	...
Water for yard locomotives	29,148.40	.04	...	...	...	...	...	...	...	...
Lubricants for yard locomotives	15,184.61	.02	...	...	...	...	...	...	...	...
Other supplies for yard locomotives	14,960.70	.02	...	...	...	...	...	...	...	...
Engine house expenses: Yard	749,850.26	1.02	...	...	...	...	...	...	...	...
Yard supplies and expenses	96,039.40	.13	...	...	...	...	...	...	...	...
Operating joint yards and terminals	19,292.53	.03	...	...	...	...	...	...	...	...
Train enginemen	3,190,338.75	4.38	74	324	95	416	74	324	...	...
Fuel for train locomotives	8,150,510.96	11.10	100	111	090	999	60	666	25	278
Water for train locomotives	242,376.59	.34	100	34	90	31	60	20	25	09
Lubricants for train locomotives	130,892.08	.19	100	19	90	17	100	19	25	05

Item	1920 maintenance and operating expenses: Amount	Per cent of total	Grade: Per cent affected	Grade: Per cent cost per train mile	Distance: Per cent affected	Distance: Per cent cost per train mile	Helper: Per cent affected	Helper: Per cent cost per train mile	Curvature: Per cent affected	Curvature: Per cent cost per train mile
Maintenance of Way										
Other supplies for train locomotives	91,851.64	.13	100	13	90	12	100	13	...	...
Engine house expenses: Train	1,549,143.53	2.13	100	213	100	213	100	213	...	...
Trainmen	3,402,994.45	4.66	69	321	95	443	23	117	...	...
Train supplies and expenses:										
Cleaning cars	319,125.84	.45	...	...	...	...	...	...	...	...
Heating cars	62,988.64	.09	...	...	...	...	...	...	...	...
Lighting cars	85,110.70	.12	...	...	30	04	...	...	...	...
Lubricating cars	226,203.68	.31	...	..	90	28	...	...	...	...
Icing cars and watering cars	13,163.69	.02	...	...	...	...	...	...	...	...
Y. M. C. A.	27,804.38	.04	...	...	...	...	...	...	...	...
Detouring trains	1,884.49	...	...	...	...	...	...	...	...	...
Train supplies	73,464.14	.10	50	05	...	...	...	...	...	...
Other expenses	201,204.46	.28	50	14	...	...	50	14	...	...
Signal and interlocker operation	768,881.20	1.04	...	...	...	...	...	...	...	...
Crossing protection	585,281.25	.80	...	...	...	...	...	...	...	...
Drawbridge operation	47,168.74	.07	...	...	...	...	...	...	...	...
Telegraph and telephone operation	119,718.80	.17	...	...	...	...	...	...	...	...
Operating floating equipment:										
Superintendence	170,346.75	.24	...	...	...	...	...	...	...	...
Wages of crews	1,671,607.20	2.29	...	...	...	...	...	...	...	...
Fuel	381,175.69	.52	...	...	...	...	...	...	...	...
Lubricants	17,195.76	.02	...	...	...	...	...	...	...	...
Other supplies and expenses	96,181.68	.13	...	...	...	...	...	...	...	...
Other expenses	147,476.45	.20	...	...	...	...	...	...	...	...
Elevation and longshore labor	426,472.25	.58	...	...	...	...	...	...	...	...
Elevation and shore expenses	...	...	...	...	...	...	...	...	...	...
Stationery and printing	248,640.00	.35	...	...	...	...	...	...	...	...
Other expenses	409,154.43	.56	...	...	...	...	...	...	...	...
Operating joint tracks and fuel	13,475.43	.02	...	...	...	...	...	...	...	...
Insurance	92,713.34	.13	...	...	...	...	...	...	...	...
Clearing wrecks	121,544.91	.17	...	...	50	09	...	...	...	...
Damage to property	127,690.82	.18	...	...	50	09	...	...	...	...
Damage to live stock on right of way	10,795.91	.01	62	01	100	01	...	...	...	...
Loss and damage: Freight	1,259,717.24	1.73	15	26	25	43	...	...	20	17
Loss and damage: Baggage	2,285.46	...	...	...	...	...	...	...	...	...
Injuries to persons	431,459.98	.59	10	06	50	30	10	06	...	...
Miscellaneous Operations										
Dining and buffet service	253,153.52	.35	...	...	...	...	...	...	...	...
Hotels and restaurants	738,502.31	1.01	...	...	...	...	...	...	...	...
Total	$71,921,875.17	100.00	...	2842	...	4807	...	1984	...	1729

Total passenger train mileage 5,600,540
Total freight train mileage 6,344,882
Total 11,945,422

Cost per train mile ..... $\frac{71,921,875.17}{11,945,422} = 6.02$

Cost per freight train mile for 1920 ..... = 8.77
Cost per passenger train mile for 1920 ..... = 8.28
} as reported to the I. C. C.

	Grade	Distance	Helper	Curvature
Cost per train mile	.....	.....	19.84	.....
			6.02	
			1.194	
Interest charge	.....	.....	.065	.....
Saving in dollars per mile	.....	.....	1.259	.....
	28.42	48.07	.....	17.29
Cost per passenger train mile	3.28	3.28	.....	3.28
	0.932	1.577	.....	0.567
Interest charge	.057	.073	.....	0.0
Savings in dollars per train mile	0.989	1.650	.....	0.567
Cost per freight train mile	28.42	48.07	.....	17.29
	8.77	8.77	.....	8.77
Interest charge	2.492	4.216	.....	1.516
	.057	.073	.....	0.0
Saving in dollars per train mile	2.549	4.289	.....	1.516

Note—Figures for grade are based on the addition or elimination of one train in handling a given business.

Figures for distance are based on the elimination of one mile.

Figures for helper engines are based on the elimination of one helper mile.

Figures for curvature are based on one mile of 5-deg. curve compared with the average curvature of 50 min.

Figures for rise and fall are based on the comparison between two miles of level tangent track and two miles of tangent track with a hump of 264 ft. in the middle.

While the elimination of rise and fall will slightly affect track maintenance, locomotive and car repairs, etc., the main item affected and the only one amounting to a considerable saving is reduction in fuel, water and lubrication for locomotives. These items would be affected approximately 50% — 50% of items affected = 5.31. Say 5% X cost per train mile $6.02 = 0.30 savings in dollars per train mile.

the life of the tie primarily depends upon its ability to stand mechanical wear this life is shortened as the number of engines passing over it increases. Since the per cent of road freight engines to the total number of engines is approximately 60 per cent, the ties would be affected about 12 per cent by the elimination of one train.

Account 214-Rails, Account 216-Other Track Materials and Account 218-Ballast will likewise be affected about 12 per cent. Before the change was made on the line in question all traffic was handled on two tracks with high speed first-class passenger trains and both slow and fast freight service on the same tracks. About 40 per cent of the freight service consists of coal trains and a large part of the other freight is manifest traffic which is moved over the road at high speed. It is very hard to keep high grade tracks for passenger service where all sorts of freight trains are handled over the same tracks at both slow and high speed. It is thought by those best qualified to know that many heavy loaded freight cars with small diameter wheels do more damage to rails and the rest of the track structure than the engines, although the latter have much heavier wheel loads. As a result it is very expensive to maintain track where many heavy loaded large capacity freight cars are handled. Originally I placed a higher percentage on the effect of eliminating the engine than I now believe warranted. As a result I have fixed 20 per cent as a fair amount for rail, ties, other track materials and ballast. Since only 60 per cent of the power is used in road freight service the above percentage is reduced to 12 per cent.

Account 249—Signals and Interlockers. A total of 31 per cent is allowed for this account on the ground that about 50 per cent of the expense of maintaining signals and interlocking is directly due to train movements. The life of an automatic signal depends upon its use. The cost of maintenance increases with the number of train movements and as the train movements increase the signals must be placed closer together.

Accounts 308, 309 and 310—Steam Locomotive Repairs, Depreciation and Retirement will be affected about 62 per cent, this being the ratio that road freight engines bear to the total engines in service.

Account 392—Train Enginemen: This is affected about

74 per cent, this being the ratio of the freight train enginemen to the total.

Accounts 394, 397, 398 and 399—Fuel, Water, Lubricants and Other Supplies for Train Locomotives: These items are made 100 per cent on the ground that a reduction in grade entirely eliminating a freight locomotive will also make a marked decrease in the amount of coal, water, etc., consumed by the passenger locomotives.

Account 400—Enginehouse Expenses Train: This account will be affected 100 per cent.

Account 401—Trainmen: This will be affected 69 per cent or the ratio that the wages of freight trainmen bear to the wages of all trainmen.

Elimination of Distance.—Account 405—Crossing Protection: If the charges to this account were uniform over the entire road, this item would be affected 100 per cent. As a matter of fact it cannot be so considered. For the territory in question there were 29 public grade crossings and numerous private crossings at the time of the change. For the crossings which were at that time protected by gatemen 50 crossing watchmen would now be required and the wages and other expenses in this connection would amount to the interest on not less than one million dollars. Therefore the saving in connection with the elimination of crossings has been considered as a separate item.

TABLE II. ESTIMATED SAVINGS OF CLARKS SUMMIT-HALLSTEAD CUT-OFF OVER OLD LINE BASED ON 1908 TRAFFIC

Savings due to grade reduction.		
Slow freight, 6,136 x 41 x .4851		$122,039.52
Fast freight, 779 x 61 x .4851		23,051.47
Fast freight, 327 x 57 x .4851 Binghamton to Elmira		9,041.78
Savings due to distance eliminated.		
18,396 x 3.56 x .9155		59,955.88
Savings due to curvature eliminated.		
18,396 x 8.1 x 0.2912		43,391.01
Savings due to rise and fall eliminated.		
18,396 x 475 x 0.09463 divided by 26.4		31,321.45
Savings due to pusher miles eliminated.		
99,026 x 0.3993		39,541.08
18,639 x 0.3993, light engine Binghamton to Elmira		7,442.55
Savings due to Hallstead Yard		29,499.30
Total savings		$365,284.04
Savings capitalized at 4 per cent		$9,132,101.00
Total cost of new line	$14,259,340.21	
Less savings on account of the eliminating flagmen on 29 grade crossings, the elimination of the necessity of additional third track along the old line, value of salvage old line, etc.	1,905,900.00	$12,353,440.21
Net loss		$3,221,339.21
BASED ON TRAFFIC IN 1920		
Savings due to grade reduction.		
Slow freight, 3,050 x 41 x 2.549		$349,340.45
Fast freight, 994 x 61 x 2.549		154,556.10
Fast freight, 1,060 x 57 x 2.549, Binghamton to Elmira		154,010.58
Savings due to distance eliminated.		
Freight, 14,081 x 3.56 x 4.289		215,000.50
Passenger, 10,416 x 3.56 x 1.650		61,183.60
Savings due to curvature eliminated.		
Freight, 14,081 x 8.1 x 1.516		172,909.05
Passenger, 10,416 x 8.1 x 0.567		47,837.60
Savings due to pusher miles eliminated.		
148,600 x 1.259		187,087.40
27,176 x 1.259		34,214.60
Savings due to rise and fall eliminated.		
24,497 x 475 x 0.30 divided by 26.4		132,228.12
Total savings		$1,508,368.00
Savings capitalized at 6 per cent		25,139,466.67
Total cost of new line	$14,259,340.21	
Less savings on account of the elimination of flagmen on 29 crossings, the elimination of the necessity of additional third track on old line, value of salvage old line, etc.	1,905,900.00	12,353,440.21
Net gain		$12,786.026.46

Note: If the savings are capitalized at 4 per cent as figured in 1909 the net gain becomes $25,355,760.

Account 202—Roadway Maintenance; 208—Bridges, Trestles and Culverts; 212—Ties; 214—Rails; 216—Other Track Materials, and 218—Ballast: All the track laying and surfacing subdivisions; roadway buildings and damage to live stock on right-of-way will be affected 100 per cent. These items will be entirely eliminated.

Account 249—Signals and Interlockers will be affected 50 per cent on the ground that the automatic signals will be eliminated, but the number of interlocking plants will not be affected.

Accounts 308, 309, 310—Steam Locomotive Repairs, Depreciation and Retirements: These items will be affected 80 per cent for the reason that 80 per cent of all locomotives are in road service.

Accounts 314, 315, 316—Freight Train Car Repairs, Depreciation and Retirements will be affected 65 per cent on the basis that 65 per cent of all repairs are due to road service. In like manner Accounts 317, 318 and 319—Passenger Train Car Repairs, Depreciation and Retirements will be affected 75 per cent.

Accounts 392 and 401—Train Enginemen and Trainmen will be affected 95 per cent on the basis that 5 per cent of the total expenditure is made up of constructive mileage.

Accounts 394, 397, 398 and 399—Fuel Water, Lubricants and Other Locomotive Supplies will be affected 90 per cent on the basis that 10 per cent of the expenditure is due to supplies paid for while trains are standing on the sidetracks, stations, etc.

Account 400—Enginehouse Expense Train will be affected 100 per cent.

Helper Engines.—Assuming that one-half the pusher mileage is light and that a light engine will do one-half as much damage to the track and to itself as it will do when handling tonnage, we can apply 75 per cent to all the items of roadway maintenance and maintenance of equipment which will be affected by a change in grade as shown in Table I.

Account 392—Train Enginemen will be affected 74 per cent, this being the ratio of freight enginemen's expense to the total expense of train enginemen.

Accounts 394 and 397—Fuel and Water will be affected about 60 per cent owing to the fact that the engines are running light part of the time.

Accounts 398, 399 and 400—Lubricants, Other Supplies for Train Locomotives and Enginehouse Expenses (Train) will be affected 100 per cent.

Account 401—Trainmen will be affected about 25 per cent since only one trainman is required for each pusher. As a matter of fact at the present time trainmen are not used on pusher engines.

Curvature.—Account 212—Ties is affected 50 per cent on the basis that a better grade of tie is required on a five-degree curve than on a straight track, costing in the neighborhood of 25 per cent more money. Furthermore, the life of ties on straight track is approximately 30 per cent longer than on a five-degree curve.

Account 214—Rails is affected 400 per cent based upon records of rail renewal.

Account 216—Other Track Material is affected 200 per cent or one-half that applied to rail on a basis that new bars, bolts and spikes are required when rail is relaid, whereas the same tie-plates can be continued in service.

Account 218—Ballast is affected 30 per cent on account of the increased amount of ballast being required to form a shoulder and to provide for the elevation. There is also a greater wear on the ballast and consequently a shorter life on account of necessary additional tamping.

Account 220-Track Laying and Surfacing is affected 100 per cent, this being a fair average of the percentage applied to Ties, Rails, Ballast, etc.

Accounts 308, 309 and 310 are affected 30 per cent on the basis that 15 per cent of the cost of engine repairs and renewals is chargeable to drivers and ties and this expense will be at least twice as much on a five-degree curve as on the average alinement.

Accounts 314, 315, 316, 317, 318 and 319, Freight and Passenger Car Repairs, Depreciation and Retirements will be affected 20 per cent.

Rise and Fall.—While several items of the accounts will be affected in a slight manner by rise and fall, the only one that amounts to any considerable sum is the question of fuel for locomotives. We have considered this item as 50 per cent affected due to the fact that there is considerable loss when the engine is working at low efficiency while pulling a heavy load, say at ten miles per hour; also a loss due to poor combustion at low speed. A very considerable increased amount of coal is necessary where engines are operating at low rates of speed. Furthermore, more steam is consumed and more or less energy wasted in braking down the train on descending grades.

The Summary of Savings to Be Expected

In order to apply the total percentages arrived at, and as shown in detail on Table I, it is necessary to estimate the number of trains which would be required to handle the 1908 business over the proposed new line and thus determine the total train miles saved per annum on account of reduced grades. It is likewise necessary to determine the number of pusher engine miles saved. In arriving at the number of train miles saved, care was used to give full consideration to the movement of light engines over the road because of unbalanced traffic. It was also necessary to consider carefully the total distance over which the increased tonnage per train would be handled. While that part of the old line revised was only 43 miles long, all fast freights would be affected from Scranton to Binghamton, a distance of 61 miles, and part of these trains would be affected from Binghamton to Elmira, an additional distance of 57 miles. It was only a matter of multiplication to determine the net saving per annum.

In figuring the total amount saved on account of eliminating curvature, the total reduction of curvature is reduced to miles of five-degree curve. The result in miles is multiplied by the total number of trains per annum.

In Table II, attached, will be found the estimated savings for the Clarks Summit-Hallstead Cut-off as compared with the old line, based upon the traffic of 1908, and also on the actual traffic for 1920. The savings as computed for the 1908 business as given in Table II, are exactly as figured in 1910.

It will be noted that the total saving figured on 1908 business is $365,284.04, which, capitalized at four per cent, is $9,132,101. The actual cost of constructing the line was $14,259,340.21. This amount can be reduced by $1,000,000 for the cost of eliminating the grade crossings which would have been necessary if the old line had been retained. The cost of building a third track on the old line, together with the credits for rail amounted to $905,900, making a total credit of $1,905,900. Therefore, the net savings to be expected based on 1908 business would fall short of building the new line by about $3,221,339.

The other computation at the foot of Table II is based on actual traffic on the new line for 1920 compared with the estimated traffic that would be necessary to take care of the 1920 business on the old line, taking into account the increase in tonnage per train mile in 1920 as compared with 1908. The total net saving as figured is $1,508,368 which, capitalized at six per cent, amounts to $25,139,466.67; deducting the net cost of construction leaves $12,786,026.46. This latter figure is increased to $25,355,760 if we use four per cent as the interest rate, as was done in 1909.

The Tunkhannock Viaduct

This paper is not complete without a word about the Tunkhannock viaduct and the reasons for building a concrete structure in preference to a steel one. In order to construct the line with the established grades it was found necessary to cross Tunkhannock creek at an elevation of approximately 240 ft. above the water, which would require a structure from 2,500 to 3,000 ft. in length. After spending much time in arriving at what was considered the most economical design for a concrete viaduct, plans and specifications were submitted to contractors for bids. At the same time five or six bridge companies were asked to submit bids on a steel structure. The bridge companies were all requested to submit bids both on the design made by the railroad and on their own designs, thus giving each bridge company an opportunity to work out the most economical design for a steel structure.

When the bids were received it was found that the first cost of a steel viaduct consisting of an 8-in. reinforced concrete floor slab supported on transverse I-beams which in turn were supported by three lines of deck and two lines of through plate girders carried on towers, was slightly over a million dollars. It was estimated that a $200,000 sinking fund at four per cent interest was necessary to paint, inspect and otherwise maintain the steel viaduct. It was assumed that 50 years would be the maximum life of a steel viaduct and that a sinking fund of approximately $150,000 would be required to replace the structure in 50 years, provided that the viaduct could be rebuilt as cheaply at that time. The total cost of the steel viaduct, therefore, on the 50-year life basis, amounted to approximately $1,350,000. The estimate for the concrete structure, based upon the figures received from contractors, was $1,349,000. The actual cost of the concrete viaduct including all extras, waterproofing, etc., was $1,424,950.

Several points in favor of the concrete viaduct caused it to be adopted in preference to steel. These may be summarized as follows:

1. With any future increase in live load up to 50 per cent over the loads of 1912 the unit stresses will not be increased over ten per cent.

2. The concrete structure, as designed and built, is a more substantial structure and less liable to be damaged by derailment or a wreck of any kind. In the case of an engine or car falling over the side of the structure no damage could possibly be done to the concrete viaduct, whereas a steel viaduct might be very seriously injured and traffic tied up for an indefinite time. With the concrete viaduct, there is little possibility of a derailed car or engine ever falling over the side of the structure. A very substantial retaining wall was provided on both sides and will act as a guard in case of derailment. Such a guard could not be provided on a steel structure without a very large increase in the cost.

3. It would be impracticable to rebuild the steel structure in the future on the original foundations when necessary to replace. This would require a change in line with increased cost for rock excavation and embankment.

Careful consideration was also given to the possibility of constructing a fill across the valley, but this was found to be exceedingly expensive. Nearly 7,000,000 cu. yd. of fill would have been required and a very large quantity of masonry for arches to carry Tunkhannock creek and the public highway on the west side of the valley.

Conclusions

Finally, in considering the advantages gained by the construction of this new line, it must not be overlooked that with the exception of the tunnel and the Tunkhannock viaduct, the roadbed for the entire line was constructed for three tracks. Three tracks were built from the tunnel to Clarks Summit and four tracks on the western 10 miles from New Milford to Hallstead.

On the old line there were two narrow, single track, poorly ventilated tunnels with insufficient side and overhead clearance. The one tunnel, 3,600 ft. in length, on the new line, affords standard clearances, two good ventilating shafts and was lined with vitrified brick throughout. The cost of maintaining this tunnel is materially less than the cost of main-

taining the old tunnels, to say nothing of the more satisfactory operation.

While the new line cost somewhat more than was originally estimated, it was not anticipated that a four-track railroad would be built over any portion of the line and a third track was only provided on the heavy grades. A very material change was also made at Clarks Summit where westbound slow trains pass under the main tracks in order to avoid crossing these tracks at grade at the summit as was the practice on the old line.

The year 1920 cannot be considered a safe year as a basis for computing transportation costs. Nevertheless the figures indicate that there would still be a wide margin in favor of the new line if the cost per train mile should be cut in two, to say nothing of increased traffic in the future.

In conclusion I wish to give full credit to M. H. Doughty and L. L. Tallyn, division engineers, who worked with me in all the computations and deserve much credit for the vast amount of work which was necessary in order to reach the conclusions. I also wish to mention F. L. Wheaton, now division engineer of the Buffalo division, who had charge of the construction work.

Freight Car Loading

WASHINGTON, D. C.

LOADING of revenue freight totaled 742,926 cars during the week ended on December 10, as compared with 747,454 cars during the previous week, or a reduction of 4,528, according to reports received by the car Service Division of the American Railway Association. This was a decrease of 95,027 cars compared with the corresponding week last year and 19,014 cars less than were loaded during the corresponding week in 1919.

Small increases were reported in the loading of all commodities during the week compared with the week before, except merchandise and miscellaneous freight, which includes manufactured products. Loading of this last named class of freight totaled 461,741 cars compared with 470,914 the week before or a reduction of 9,173 cars. It was, however, an increase of 3,500 over the total for the corresponding week in 1920 but 18,000 cars less than were loaded during the same week in 1919.

Loading of grain and grain products amounted to 48,680 cars, 1,453 cars more than were loaded during the preceding week and 12,955 cars more than were loaded during the same week last year. It also was an increase of 11,551 cars over the corresponding week in 1919.

There were 32,159 cars loaded with live stock, an increase of 204 cars over the previous week and within 66 cars of reaching the total for the corresponding week last year. An increase over the previous week of 533 cars was reported for coal, the total being 137,836 cars, while coke, with a total of 6,638 cars, showed a gain of 293 over the same period. Forest products totaled 49,744 cars, an increase within a week of 1,341 cars and a gain of 151 cars over the same week last year. Ore also showed an increase of 811 cars over the week before, the total being 6,128 cars.

Compared by districts, the Pocahontas and Southern were the only ones to report an increase in loadings over the week before while all showed reductions compared with the corresponding week last year.

Freight cars idle because of business conditions totaled 528,158 on December 8, compared with 455,376 on December 1 or an increase of 72,782 cars within that period.

Of the total, 368,042 were surplus cars, an increase within a week of 85,116. The remaining 160,116 were idle freight cars in need of repairs over and above the number normally in bad order.

Surplus box cars totaled 129,995, which was an increase of 16,121 over the total on December 1, while surplus coal cars numbered 166,063, an increase of 33,370 within the same period. An increase within a week of 2,412 was reported for stock cars, but a reduction of 64 in the number of surplus coke cars.

While there was an increase in the number of surplus cars, the reports showed a reduction in the number of bad order cars, the total number needing repairs on December 1, the latest date available, being 320,292 or 14 per cent of 2,288,228, the total number of cars on line on that date. This compares with 333,616 or 14.4 per cent reported in bad order on November 15. Assuming 7 per cent of the cars on line to represent the number normally in need of repairs, this would leave 160,116 as the number of bad order cars which are idle because of business conditions.

THE GOLDENDALE BRANCH of the Spokane, Portland & Seattle, from Lyle, Wash., north to Goldendale, 42 miles, and the line of the Oregon Trunk, from Fallbridge, Oregon, south to Bend, 156 miles, resumed service on December 10, after a suspension of three weeks on account of snow blockades.

A VETERANS' ASSOCIATION, for the Metropolitan District, is proposed by the New York Central to its employees in New York City and Weehawken, N. J., in a circular inviting the employees and their families to attend a meeting to be held on Sunday afternoon, January 8. President A. H. Smith and other officers will address the meeting.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 10, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	10,153	3,993	39,711	1,597	5,174	1,310	62,487	62,304	186,729	.....	.....
	1920	6,330	4,055	62,722	2,617	6,281	4,824	47,687	70,749	.....	205,265	193,613
Allegheny	1921	2,959	4,223	41,031	3,386	2,676	2,420	45,288	50,231	152,214	.....	.....
	1920	2,034	3,662	66,917	7,327	2,953	6,528	39,262	56,762	.....	185,445	163,338
Pocahontas	1921	264	160	14,979	171	1,286	21	5,859	3,125	25,865	.....	.....
	1920	122	130	22,628	816	1,667	129	5,198	2,893	.....	33,583	35,981
Southern	1921	3,741	2,047	16,437	474	16,783	522	38,313	36,456	114,773	.....	.....
	1920	2,753	2,255	32,748	1,102	15,808	2,227	33,626	36,005	.....	126,524	113,763
Northwestern	1921	13,826	8,582	7,126	746	12,119	333	26,601	24,668	94,001	.....	.....
	1920	11,062	9,060	9,849	1,338	11,230	1,503	25,800	29,169	.....	99,011	102,613
Central Western	1921	13,350	10,570	15,581	165	5,004	813	30,867	34,554	110,904	.....	.....
	1920	9,792	10,942	27,726	489	4,580	2,653	29,519	37,024	.....	122,725	98,115
Southwestern	1921	4,387	2,584	2,971	99	6,702	709	16,303	24,685	58,440	.....	.....
	1920	3,632	2,121	7,360	100	7,074	567	16,550	27,996	.....	65,400	54,517
Total all roads	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926	.....	.....
	1920	35,725	32,225	229,950	13,789	49,593	18,431	197,642	260,598	.....	837,953	.....
	1919	37,129	36,188	131,416	9,279	54,432	13,679	149,622	330,195	.....	.....	761,940
Week ended:												
December 10	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926	837,953	761,940
December 3	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286
November 26	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,000	219,757	673,827	803,701	739,197
November 19	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	889,138	854,601
November 12	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	250,858	753,046	927,586	808,304

First Part of Rate Hearing Concluded

Preliminary Testimony Given by Railroads Who Oppose Further Rate Reductions at Present

WASHINGTON, D. C.

THE FIRST STAGE of the hearings before Commissioners Aitchison, Esch, Hall and Lewis of the Interstate Commerce Commission in its investigation as to what, if any, further reductions in rates may lawfully be required and the future percentage of net return to be allowed, was completed on December 17. Four days had been consumed in introducing the preliminary testimony of the carriers of the eastern, southern and western districts in response to the questions propounded in advance by the commission, when the hearing was adjourned to January 9. The commission had allotted seven days for this testimony but the roads had been unable to complete the compilations requested in time and additional statistical information will be presented when the hearing is resumed. R. H. Aishton, president of the American Railway Association, is also to testify on efficiency and economy of operation, J. G. Walber, secretary of the Bureau of Information of the Eastern Railroads, on the wage question, and various executives on the percentage to be prescribed by the commission as constituting a fair return after March 1.

The preliminary testimony consisted of statistical statements from the three districts showing the present financial condition of the railways and the results attained under the advanced rates as well as under the reduction in wages and in other expenses made in recent months. This showed that for the 12 months ended September 30, 1921, the eastern roads had earned a net operating income of 2.75 per cent on the tentative valuation prescribed by the commission (as adjusted to cover only Class I roads and to include additions and betterments made during 1920), while the Southern roads had earned 1.8 per cent and the Western roads 3.04 per cent. While it was shown that these percentages had been considerably exceeded since July, and in October had reached an average of 5.4 per cent for the roads as a whole, it was also shown that traffic had fallen off considerably in November and December and it was estimated that the net return for those months would show reductions.

The attitude of the carriers toward further rate reductions was stated by the traffic executives, who all testified that the present rates are yielding the railroads an inadequate return and in the aggregate are not unreasonably high, considering the cost of transportation; that thousands of reductions had already been made, many of considerable extent by way of readjustment and to meet the requests of shippers, and that in general rates should not be further reduced until the roads have had further opportunity to reduce their expenses. They asserted that freight rates have not been the cause of the depression in business and that, in general, further decreases would not stimulate business materially because of the many other factors that tend to retard the restoration of traffic.

Postponement of Grain Reduction Denied

While the hearing was in progress the commission on December 16 surprised the carriers by denying their petition for a rehearing of the case in which the commission had ordered a general reduction in the rates on grain and grain products and hay in the western district, effective on December 16, which, it is estimated, will reduce the revenues by about $33,000,000 a year. While the petition of the carriers, in which they had also asked for a general rate investigation and had proposed the 10 per cent general reduction on agricultural products, had been technically for a rehearing of the case, at the argument on December 14 they had asked that the order be suspended for six months pending the outcome of the investigation. While the 10 per cent reduction on agricultural products for six months had been proposed as a substitute for the larger reduction on grain and products and hay confined to the west, and it had been generally understood that it was contingent upon a postponement of the grain order, Alfred P. Thom, counsel for the Association of Railway Executives, had burned the bridges behind him in his argument for a six months' suspension by stating that the 10 per cent reduction was in no way dependent upon the action in the grain case and that the roads had taken "an irretrievable step." The railroads had been very hopeful that their plan would be accepted but a great deal of pressure had been brought to bear on the commission to put its order into effect. Originally the commission had directed the roads to make the reduction on or before November 20, without issuing a formal order, and the order was only issued on November 21, after the roads had failed to file the tariffs, but had proposed the more general 10 per cent reduction as an alternative which would afford a broader relief to the agricultural industry.

Geo. M. Shriver Presents Comparative Statements for the Roads As a Whole

George M. Shriver, vice-president of the Baltimore & Ohio, presented the general statistical testimony for the roads as a whole and for the eastern district. Mr. Shriver's statement was summarized as follows:

It is shown that the net railway operating income of the Class I railroads of the United States for the 12 months to September 30, 1921, was $542,409,582, or 2.75 per cent on the property investment; that because of decreased operating income and increased charges and taxes, the net corporate income has been so diminished that some carriers have been compelled to suspend, and others to reduce, the customary dividends, while some have maintained customary dividends only by drawing upon surplus earned in previous years, consequently, of course, the surplus and margin to sustain credit has been reduced.

That because of lowered rates, and falling off in traffic, the railroads have failed to earn more than one-half the anticipated 5½ per cent and nothing towards the one-half of one per cent contemplated as a contribution towards additions and betterments and to sustain credit; that the railroads have large accounts pending settlement with the government, and the manner in which these are disposed of will have a material bearing upon their cash position.

The Eastern carriers have shown that their operating income for the 12 months to October 31, 1921, was $234,594,277, or 2.67 per cent on the property investment, and fell short of meeting the fixed charges of these carriers by $70,000,000. That when the operating results of this year are restated to reflect the effect of lowered rates and lowered costs to do over again the business of 1921, the estimated net operating income of the Class I railroads would be, say, $473,984,331, affording a return of about 5.40 per cent, but without having made any provision for many important items of maintenance which were deferred in that period.

That it will require extensive work to fully restore the condition of the properties, particularly equipment, to meet the requirements under normal traffic, and that large sums must be raised for additions and betterments, if the railroads are to be prepared to help, and not to hinder, the future commercial and industrial expansion of the country.

Roads Not in a Position to Experiment

In this situation the railroads are not in position to experiment (beyond what they have already done) by a lowering of rates at this time, and having in mind the prime importance to the country of having a strong and effective transportation system, it does not appear in the interest of the public that they should do so

unless and until the processes now operating towards a pre-war level of costs have been more completely realized.

While the preliminary figures for November show again a sharp falling off in traffic, and the car movement reported so far for December indicates an even more serious decline, this is believed to be only temporary (influenced perhaps by the actual decrease in charges with the cancellation of the transportation tax at January 1, 1922, and no doubt in part pending conclusion of this hearing), as the underlying conditions in the United States and the world at large appear to be improving generally; while currently railroad operating costs are on a basis which affords an inadequate return, the basic elements of cost are declining and will no doubt continue, so that in the not distant future railroad transportation can again be brought to the relative position it had heretofore occupied of being the lowest priced commodity in the country, and continue—as it now is—lower than in any other country.

1920 Operations Compared with 1916

Mr. Shriver in his testimony said in part:

It is almost inconceivable to the average person that the railroads, which in 1916 earned a net operating income of $1,040,085,517, should in 1920, with 71.77 per cent more gross revenues, have earned net of only $21,661,782. It is true both of these years were exceptional, 1916 in that it was a year of substantial traffic handled under favorable operating conditions, while 1920 was exceptional in that for the first two months the properties were operated under federal control, and these two months no doubt carried some extraordinary expenses incident to the conclusion of such operation; for the months from March to October the railroads were called upon to perform the largest traffic movement in their history under particular pressure, and with their properties, especially cars, in a more or less depleted condition. This period was followed by two months in which there was a sharp falling off in business, so sudden and so general that it was impossible for the carriers to at once adjust their operations accordingly. These and other reasons rendered their operations for 1920 unusually expensive.

The comparison of these two years illustrates in a striking manner how the upward trend in expenses had exceeded the increase in revenues:

Comparing the year ended December 31, 1920, with the year 1916, it will be noted that the passengers one mile increased 35.46 per cent, and the net ton miles increased 12.84 per cent. Notwithstanding the increase in passenger and net ton miles handled, there was an actual decrease in the total train mileage of 2.34 per cent.

The total hours on duty of all employes in 1920 was 7.68 per cent larger than in 1916, while total wages paid in 1920 was 149.39 per cent greater than in 1916.

Taking the business as a whole, revenues increased only 71.77 per cent during the same period, while total expenses increased 147.37 per cent.

For 1916 the total operating revenues were		$3,596,865,766
And the net railway operating income applicable to interest and other corporate purposes was		$1,040,084,517
The increase in revenue 1920 over 1916, due both to increased traffic and increased rates and charges aggregated	$2,581,522,280	
Total wages increased	$2,193,967,278	
Cost of fuel increased	452.229.229	
Total increased cost of wages and fuel (or for these two items alone more than the entire increase in revenues)	$2,646,196,507	
Other expenses inc.	827,870,197	
A total increase in expenses of	3,474,066,704	
Or an increase in expenses in 1920 over 1916 in excess of increase in revenues of		$892,544,424
And correspondingly reduced the net operating income, which becomes		$147,540,093
From this there is to be further deducted increases in taxes, hire of equipment and rents, etc.		125,878,311
Leaving the net operating income in 1920 available for interest and other corporate purposes		$21,661,782
As compared with that earned in 1916 of		$1,040,084,517

Results Following Decision in Ex Parte 74

The commission authorized increases in rates and charges, designed to meet the expense basis existing at the time of the decision and to produce a net railway operating income equal to 6 per cent upon the value of the properties. For the months of September and October traffic continued to move in a volume so large that it taxed the ability of the railroads to handle it. While the rates were not effective in their entirety, owing to the delays in securing the concurrence of several of the state commissions, etc., and notwithstanding the expense of operation continued to rise, reaching perhaps the peak in this period, the operating income for these two months (September and October, 1920,) was $75,310,311 and $86,455,487, respectively, an aggregate of $161,765,798, or on an annual basis of return of about 4.20 per cent when related to the tentative valuation fixed by the Interstate Commerce Commission.

Many of the increases in freight and passenger rates authorized by the commission did not become effective until perhaps January 1, and some not until later periods, so that the results for the two months, even if it were proper to use so short a period for projecting, do not fully reflect the returns that might have been expected under the increased basis of rates.

Calendar Year 1921

The falling off in traffic noted in November and December, 1920, continued with some seasonal variations, through the months of January to October, 1921.

In comparing the income for 1921 with that of the test period, consideration must be given to the fact that more than $2,000,000,000 has been added to the property investment since.

Following the establishment of the new rate basis in August, 1920, it became necessary almost immediately to make various adjustments in rates, and up to the present time thousands have been made, most of them involving lower charges; some of them being so substantial as to result in large decreases in the earnings.

Because certain of the expenses are inelastic, however, and because of the impossibility of reducing maintenance expenditures below the limit of safety, the railroads were unable to bring their expenses down in proportion to the falling off in revenue, and consequently there was a narrowing of net railway operating income for the period which fell far short of meeting the anticipations following the rate adjustments authorized in Ex Parte 74.

A number of roads have reduced their rate of dividend and several have been compelled to suspend payments entirely, all of which has of course a very direct bearing upon the credit of the carriers. It is not surprising under such circumstances to note that practically all new financing has been done by increasing the funded debt of the carriers, and that the ratio of debt to capital has risen from 54.5 in 1919 to 56.1 in 1920.

Official Classification Territory

Referring to the situation in Official Classification Territory, Mr. Shriver filed an exhibit showing the result of operations for the years 1911 to 1920, inclusive, and for 12 months to September 30, 1921, the operating ratio during the six years 1911-1916 averaged 71.12 per cent. From a ratio of 67.39 per cent in 1916 the ratio mounted to 74.20 per cent in 1917, 84.82 per cent in 1918, 88.19 per cent in 1919, and reached the highest in history in 1920 when it became 98.68 per cent. To indicate the outstanding facts which operate to bring about the high operating ratio of 1920, as compared with the year 1916, Mr. Shriver said:

The increase in revenues, 1920 over 1916, was 69.4 per cent, or		$1,210,440,168
The increase in expenses for the same period was 148.0 per cent, or	$1,740,379,263	
Increase in taxes, rents, etc.	40,259,794	
Total increase in expenses, taxes, etc.		1,780,639,057
An increase in expenses, taxes and rents in excess of increase in revenues of		$570,198,889
So that the net railway operating income in 1916		462,851,984
Actually became in 1920 a deficit of		107,346,905
During this period of vanishing income there was actually expended for additions and betterments to road and equipment the sum of		1,379,040,928
With consequent increase in fixed charges.		

This is the situation which confronted the carriers in the eastern district in 1920, and placed a severe strain on even those of the strongest financial credit. For the year to September 30, 1921, the operating ratio is 86.46 per cent, a drop compared with the year 1920 of over 12 points, reflecting the advance in rates for transportation granted August 26, 1920; and reduction in wages July 1, 1921, as well as substantial reductions in cost of fuel and materials.

The ratio was also affected by the curtailment in maintenance, but even with all these factors the ratio is 15 points higher than the average for the six years ending with 1916.

Twelve Months to September 30, 1921

When we review the returns for the 12 months to September 30, 1921, we find October, 1920, as a month in which a large volume of traffic moved with a fair net operating income. The decrease in volume of traffic became noticeable in the latter part of this month, and quite pronounced in November and December, 1920, and has so continued with only seasonal increases.

Preliminary reports for October, 1921, show a somewhat improved situation (due apparently to temporary causes), but in November there has again been a sharp decline in traffic and is becoming even more pronounced in December. The net railway operating income for the 12 months to September 30, 1921, was $228,873,760, or 2.72 per cent on the property investment, and fell short of meeting fixed charges of the roads in the eastern district by over $75,000,000.

Mr. Shriver showed that net railway operating income from January to October, 1921, was $204,233,484, compared with $336,890,219 for the same months of the average test period year. This $204,233,484 is equal to 2.43 per cent on property investment (excluding materials and supplies) as of December 31, 1920. These carriers during the test period, or the three years ended June 30, 1917, earned 84.47 per cent of their annual net railway operating income in the 10 months, January to October, inclusive, and projecting the income for the remaining two months, on this basis, shows a rate of return of 2.87 per cent for the calendar year 1921.

Freight Rates in Relation to Commodity Prices

Mr. Shriver in reference to the matter of freight rates in relation to commodity prices said:

The carriers are not unmindful of the fact that, even with the reductions in rates already made and those now under consideration, the charges generally are high; that is, high as compared with what they were formerly. Some statisticians have shown the average rate per ton per mile in relation to the average prices of commodities, and by confining such comparison to the period 1913 to 1917, inclusive, have indicated that the increase in rates has in recent periods exceeded the average increase in commodity prices. A comparison over so short a period, however, cannot be considered as conclusive, particularly when the year 1913, taken as a base, was one during which railroad rates were generally recognized as having been low, and in the case of the eastern district, where substantially 50 per cent of the traffic of the country is handled, the rates were found by the commission in 1914, and again in 1917, to have been lower than they should be in the public interest.

The *Railway Age* has recently published a detail statement and chart covering such statistics over a period of more than 30 years, which indicates, even without taking into consideration the decreases recently made and arranged for, that freight rates were not relatively higher than the average commodity prices. This statement and chart also shows that the railroads for a number of years were compensated on a much lower basis than were the producers of other commodities, and that the railroads did not relatively participate in the high prices prevailing from 1915 to 1920. In other words, the railroads did not realize abnormal prices or profits, and were so less able to respond with lower rates when prices generally declined.

A copy of this statement and chart was filed as an exhibit.

Referring to the request of the commission for data as to the effect upon the carriers' operating income of the reduction in rates so far made, as well as the changes which have come about in the operating costs due to lower rates of pay and lower costs of fuel, material, etc., Mr. Shriver said that detailed questionnaires have been submitted to the various carriers in a form which it is believed will develop some reliable data bearing on this question.

"Under the most favorable circumstances, it is extremely difficult with the best of data available to measure the effect of the changing conditions as applied to the traffic and operations of a given period," he said. "However, in an effort to present this situation in some tangible form, information was secured by telegraph from the various railroads in the Eastern District covering data with respect to the more important items, and using the result of these returns for the purpose of estimating, an adjusted or constructive year has been arrived at."

Continuing, he said:

The adjustment indicates that to do over again the identical business that was done in the 12 months period to October 31, 1921, upon the basis of rates and costs in effect at November 1, 1921, would show a reduction in revenues due to lower rates, etc., of $60,000,000, and a decrease in expenses due to lower rates of pay, reduction in costs of fuel and material, and miscellaneous expenses of $324,320,054, a difference of $264,320,054. Less estimated increased taxes, $25,000,000, or a net increase in income of $239,320,054, which, added to the operating income as audited, $234,594,277, would show a total income for the adjusted year of $473,914,331, and when related to the property value, as tentatively determined by the commission, afford a return of 5.40 per cent.

In making this estimate we have endeavored to be more than conservative in minimizing the lowering of rates and by using the maximum for lessened expenses, and so it is believed to reflect the maximum railway operating income which can be earned on the traffic of 1921 under present conditions. In this connection the fact should not be overlooked that a considerable proportion of the net railway operating income for the year 1921 has been realized only through the postponement of many important items of maintenance, which curtailment is, of course, also reflected in the adjusted figures.

Benjamin Campbell for New England Lines

Benjamin Campbell, vice-president of the New York, New Haven & Hartford, appeared on behalf of the New England roads. He said that based on the return to the carriers present rates in the aggregate are not unreasonable because they fall far short of a reasonable return and if searching investigation were made, a great many of the rates might be found unreasonably low. As nearly as can be forecast, he said, there is small prospect for a substantial increase in business until spring. Since August, 1920, the New England roads had originated 1390 rate proposals, many of which affected many rates, of which 93 were advances and 1297 were reductions. They have also participated in many joint rate reductions. The reductions that have been made have not resulted in increased traffic, but in some instances they hold some business that otherwise would be lost. Practically no new reductions should be made in New England under present conditions, he said, and when the time arrives for a general reduction of rates, it should only be made after an improved rate structure has been made for the New England territory, including an improved relation between classes and commodities and between trade centers. In future general reductions should be confined to carload traffic and the car load minimums should be increased. The reduction should be on raw materials.

Mr. Campbell also referred to the inadequate mail rates in New England, which, he said, are less than the actual cost of transportation. He read a supplemental statement prepared by Gerrit Fort, vice-president of the Boston & Maine, giving the results of a general canvass of the shippers of New England. This said that there was considerable objection because the proposed 10 per cent reduction on agricultural products is not to apply in New England, but explained that the railroads cannot give adequate service if their revenues are to be further reduced. Mr. Fort expressed the opinion that rail rates are only one of many factors that have resulted in depressed business in New England.

T. C. Powell for Eastern Trunk Lines

T. C. Powell, vice-president of the Erie, was the traffic witness for the Eastern trunk lines. He produced detailed statistics as to various crops and industries to show that the depressed conditions in many lines are due to world conditions and have been very slightly affected by freight rates and, therefore, that the assertion that reduced freight rates would restore business is founded on an illusory hope. He said that the prices of many crops are controlled by the demand for the service and while the people of Europe need many of these products they are unable to buy because of the low value of their money in exchange. On the other hand, increased production of grain outside the United States has decreased the demand for our surplus. While he showed that the carriers have made many and extensive reductions in rates during the past year, he said they have been deterred from making some reductions because of the fear that shippers of unrelated products would ask similar reductions.

"The conditions," he said, "at the present time differ from any preceding depression in history. Heretofore business depressions, panics and disturbances have, from the standpoint of international trade, been localized and restricted in their effects.

"These world-wide conditions are the direct result of the world war. If it were not for this fact, and if the United States could stand by itself we would be in a prosperous condition."

In relation to many of the most important basic products, Mr. Powell said that existing conditions showed low relative production which normally would make for high prices, but that prices were low because of the lack of purchasing power and that therefore freight rates had practically no effect in reducing international trade.

Mr. Powell pointed out that the major part of the surplus corn had already been sold and that, as with cotton, it was the lack of purchasing power rather than freight rates which had brought about the low prices. He also showed similar conditions in wheat.

As a contrast to this he gave the data showing a condition of prosperity in fruits and vegetables. He closed this line of testimony in relation to barley, rye, rice, hay, potatoes, apples, peaches, sweet potatoes, flax, seed, tobacco, peanuts and sugar beets by saying, "If we were independent of world conditions the prices on all of these commodities should be on a scale that would ensure a profitable return to the producer."

Mr. Powell then added that appreciating the harmful effect upon business of such uncertainty, the eastern traffic executives had recently announced that no reductions would be made in trunk line or central freight association territory on coal, coke, fluxing stone or dolomite.

Readjustments Since Ex Parte 74

Mr. Powell filed exhibits describing the various readjustments and reductions in rates that have been made in eastern territory since Ex Parte 74 and on being pressed for an estimate of the extent of the reductions, he placed it roughly at $100,000,000 a year on the basis of a normal volume of traffic. After having been led into making this guess, he was pressed by many of the shippers present for a detailed statement as to how he arrived at it and as to how much of this reduction represented a real loss to the carriers in view of the fact that some reductions were made to prevent the loss of business. Mr. Powell denied that most of the reductions had been made for the purpose of retaining business, saying many of them had been made only under pressure and had had no effect on the traffic, while they had reduced the railroad revenues.

Mr. Powell pointed out that substantial reductions had been made in export grain rates to meet Gulf and Canadian competition and that the 28 cent reduction on lake cargo coal had been originally made to meet the increased competition in the Northwest of coal from Illinois territory. The reduction had subsequently been applied to coal moving from all lake ports west of the Detroit river. Some of the reductions had been made to meet motor truck competition but very few, as the railroads were not generally attempting to meet that competition on short haul traffic. He pointed out that the export rates on iron and steel had been reduced 25 per cent at the request of the iron and steel shippers who desired to stimulate their export business, but that no marked increase in shipments had resulted, while on the other hand, the effect had been to cause reductions in the export rates via the Pacific coast. The Panama Canal competition also led to many reductions in transcontinental rates.

It is the belief of traffic officials, Mr. Powell said, that the restoration of business does not depend primarily on railroad purchases, but that the increased consumption must come from the general public. He pointed out that prices for building materials have been high out of all proportion to the rates, and that the depressed condition of the building industry has reduced the demand for iron and steel.

W. C. Maxwell for C. F. A. Lines

W. C. Maxwell, vice-president of the Wabash, testified on behalf of the Central Freight Association lines and said that as the present rates in the aggregate in the east do not yield a reasonable return based on the present operating cost, they are not, in his opinion, unreasonably high. No increases have been made since Ex Parte 74 except slight readjustments and he filed several detailed exhibits to show the extent of the reductions that have been made, in many cases by amounts as great or greater than the increases made in Ex Parte 74. Hardly a commodity has not been touched.

Mr. Maxwell presented estimates that the proposed 10 per cent reduction on farm products would reduce the revenues of the Wabash $1,233,034 a year on the basis of the 1921 traffic. For the Pennsylvania, the reduction was estimated at $5,800,000, for the New York Central at $3,053,-353 and for the Erie at $1,250,000. Mr. Maxwell also pointed out that many reductions have been made since the compilation made by the Interstate Commerce Commission which was published as a Congressional document. He said the 10 per cent reduction would affect the C. F. A. roads more than it would the eastern roads generally and he thought it would prove burdensome. The dockets of the traffic association are now loaded with applications for reductions which the carriers are trying hard to dispose of. John S. Burchmore, attorney for shippers, made a formal objection to the filing of Mr. Maxwell's exhibits which showed reductions made by state commissions in intrastate rates as being outside the scope of the hearing. Commissioner Hall overruled on the ground that while the investigation deals primarily with interstate rates, the commission cannot be asked to ignore the effect of changes in intrastate rates.

Passenger Fares

Discussing passenger fares, Mr. Maxwell said the principle of the surcharge is right and it should be continued. "It has been a crime against the common people, who ride 65 to 75 in a day coach, to let a dozen or so plutocrats occupy a magnificent Pullman car at no higher rate of fare," he said.

It is the general opinion of passenger men, he said, that the rate of fare has had no material effect on passenger travel, but that the falling off in traffic has been due to general business conditions. He said the effect of the automobile on passenger traffic has been increasing every year and is getting to be serious but he thought the effect may be offset through the increased freight traffic which comes from the automobile business. Auto trucks have taken a good deal of short haul and l. c. l. traffic, but "they are welcome to it," he said. They have had little effect on carload traffic.

When Mr. Maxwell said he thought the estimate made by Mr. Shriver that the reductions in rates made in eastern territory would amount to $80,000,000 a year is conservative, Mr. Burchmore asked if many of the reductions had not saved revenue for the roads. Mr. Maxwell said that in some cases they had had that effect.

G. W. Lamb Testifies for Southern Lines

George W. Lamb, representing the railroads in the southern district, testified that those carriers during the year ended on September 30, 1921, had a net operating income of $42,805,000, which was at an annual rate of 1.80 per cent return on their property investment. This, he said, was not sufficient to enable them to pay the interest on their bonds. For the ten months ended on October 31, Mr. Lamb testified that the southern roads had fallen short $66,135,000 of realizing a return of 6 per cent on their tentative valuation. Since the test period the rates have been increased 50 per cent but expenses have increased so that the return for 1920 was $58,000,000 less than the average for the test period. For the four months, July to October, since the wage reduction, the southern roads had earned at the rate of 4 per cent. Since last November there has been a steady decline in traffic except in October, when the business was increased by the threat of a strike. In November and December it has fallen off again. Mr. Lamb agreed with the other witnesses that the present rates cannot be considered unreasonably high since they produce less than an adequate return.

Shippers Ask Definition of Scope of Investigation

At the opening of the Saturday morning session, John S. Burchmore addressed a question to the commission regarding the scope of the investigation. He said it was expected that the principal purpose was an early determination as to the reasonableness of the entire rate structure, the ability of the carriers to reduce rates, the needs of the public, and whether any reduction should be general or limited to basic commodities. However, he said, many of the shippers are uncertain as to how broad the inquiry may be and the character of the showing that will be permitted to be made as to any commodity, so that groups of shippers may determine to what extent they should participate, he asked the commission to make clear the extent to which evidence will be received on particular commodities or groups of commodities or the extent to which shippers should expect to resort to formal complaints. C. E. Elmquist, chairman of the general committee appointed by the shippers at the hearing, said the shippers had selected a steering committee that would endeavor to reach some sort of agreement regarding the division of time but other shippers said they did not understand it would be the province of the steering committee to decide the extent to which questions of particular commodities can be gone into and that they would appreciate a ruling from the commission. Commissioner Hall said Mr. Burchmore's request would be considered, but that the commission had supposed the scope of the investigation had been made clear in the order, and that it was a general survey, but that the order does not preclude the filing of a formal complaint and counsel should judge for themselves whether their interests would be best protected by a formal complaint. He hoped the proceeding would not continue indefinitely, but the commission wanted definite concrete information as to groups of commodities so that it shall better understand the situation and ability of the carriers to respond.

Southern Lines in No Financial Condition to Make Reductions, Says Capps

Testimony to show that the railroads in the Southern district are in no financial condition to make any general rate reductions and that business prospects in the South are not promising at present was introduced by C. R. Capps, first vice-president of the Seaboard Air Line. Of 80 blast furnaces in the South, Mr. Capps said only 11 are now in operation. He also said the Southern railroads moved 2,250,000 tons less of fertilizer in 1921 than during 1920, while reports indicate no prospects of an improvement in 1922. He said in his opinion a reduction in fertilizer rates would not stimulate movement.

"I do not think conditions in the South are in any way chargeable to the present level of freight rates," said Mr. Capps. "I do not know of any business in that territory that would be stimulated by a reduction in rates."

He estimated that a 10 per cent reduction in the rates on the principal agricultural products would reduce the gross revenues of the carriers in the Southern district from January to June, 1922, by approximately $6,000,000.

In response to an inquiry by Commissioner Lewis, relative to the cost of watermelons shipped north from Georgia and other southern states, Mr. Capps said that while those melons sell in the South for from 20 to 25 cents each, the retail price last summer in Washington was $1.75.

"What was the average freight rate per melon," inquired Commissioner Lewis.

"About eight cents apiece," was the reply.

Mr. Capps said that during the 12 months ended September 30 the southern roads had earned $88,000,000 less than a 6 per cent return. Commissioner Aitchison asked if the real question is not what the prospects are for earning in the future. Mr. Capps replied that it is necessary to give some consideration to the shortage of return in the past. Commissioner Aitchison asked if it was understood that the commission was expected to make up in the future for any deficiency in the past. Mr. Capps did not reply definitely. He said he did not know of any rate that is now unreasonable, but that it is quite likely that some one would come into his office on Monday and point out one and an effort would be made to correct it if possible. He filed an exhibit of 1,000 pages, showing the changes in rates, practically all reductions, which have been made during the past year, but stated that it was impossible to estimate whether these reductions represented a loss in revenues to the carriers or the extent of the loss.

L. E. Wettling Shows Condition of Western Lines

L. E. Wettling, of Chicago, manager of the statistical bureau of the western lines, testified as to the financial condition of those roads. For the first 10 months of 1921, he said, the net operating income of the western roads was $249,383,000, which was at an annual rate of 3.7 per cent on the tentative valuation. That this was realized at the expense of the properties is shown, Mr. Wettling said, by the fact that the western carriers had reduced their expenditures for maintenance of way and structures 30.8 per cent and for maintenance of equipment 16.7 per cent as compared with 1920, while the reduction in operating expenses as a whole was only 18.7 per cent. During the last four months for which returns are available, there was a large increase in traffic as compared with the early part of the year and the net return was at the rate of 5.7 per cent; but the traffic was under that of 1920 and 1919 and reached its peak in October. For the year ending September 30, the net return of the western roads was only 3.4 per cent.

Traffic Testimony for Western Lines Given by Edward Chambers

Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, presented the traffic testimony for the western roads. He said in part:

The net revenues of carriers in western territory as a whole are not sufficient to meet their financial requirement, and are not up to what the law entitles them to receive. Therefore, we must assume that the rate structure as a whole, both freight and passenger, is not at this time unreasonably high.

As to passenger fares, it is also our judgment that the present level is not unreasonable, and that a reduction would not stimulate traffic to the extent that the possible increase in travel would offset the losses in revenues that would result.

Surcharges

The surcharge is an extra charge due to the fact that the cost of transporting passengers in sleeping or parlor cars is relatively higher than in coaches. The surcharge figures about one-third of a cent per mile and, for convenience, is made one-half of the charge for sleeping or parlor car accommodations. The surcharge was established after a careful study had developed that sleeping and parlor car passengers were not paying their proper share of transportation costs. The average load carried in sleeping or parlor cars is 15 persons and the average for coaches is 25. The average weight of a coach is about 100,000 lb.; sleeping and parlor cars weigh from 130,000 to 150,000 lb. With an average load of 15 passengers in sleeping or parlor cars, and 25 passengers in coaches—and these are the averages for all cars—the railroads carry about 9,500 lb. of weight per sleeping or parlor car passenger, and 4,000 lb. weight per coach passenger. Based upon the relative capacity and weight of equipment, the average weight per passenger in sleeping or parlor cars approximates two and one-half times the weight per coach passenger, and while the weight is not the sole measure of expense, it is a very large part of it.

Changes in Individual Rates

There have been a great many changes in specific individual freight rates, and some changes in sets of freight rates. Practically all these changes have been reductions and are the results of every-day considerations by freight traffic officers and some by orders of the Interstate Commerce Commission. Some of the reductions are due to readjustments; some to restoration of former relationships, and others to the usual reasons which always have controlled in the making of freight rates.

Reductions in Passenger Fares

In keeping with the practice that existed when the basic fare was three cents per mile or less, the carriers have continued the policy of making concessions for seasonal excursions. These excursion fares cover practically the entire country, as, for instance, summer excursion fares to Pacific Coast, Colorado, Utah, New Mexico, Texas, Florida, Minnesota, Wisconsin, Michigan, etc., and to Atlantic coast resorts, and national parks. The basis for summer excursion fares has generally been one and one-third fares for the round trip, yielding approximately 2.4 cents per mile.

Another large class of reductions, following the previous practice, has been made for conventions of all kinds, many of them national in scope. Convention fares have been made for a total of some 1,500 of these conventions since September 1, 1920, approximately 1,300 of which were at points in the western district, and two hundred at points outside of the western district. For the Grand Army of the Republic, United Confederate Veterans and the American Legion, a rate of one cent per mile was made, which, in our judgment, is not sufficient to pay the cost of service. The carriers, however, as a matter of public policy, contributed toward the success of the national conventions referred to.

Decrease in Gross from Reduced Rates

It is very difficult to arrive at the figures even approximately because of changes in the movement of particular commodities in one period as compared with another. To arrive at anything like actual figures would require investigation as to actual tonnage moving in connection with each rate reduction. Our estimate as to the reduction in gross freight revenue resulting from rate changes since August 25, 1920, using tonnage for the year ended September 30, 1921, as a basis for the estimate, is $537,500,000 in western territory, and our estimate for the reduction per annum in the event the 10 per cent reduction on agricultural products is made effective, is an additional $45,000,000 per annum, which would make the total reduction, based on a year's tonnage in western territory, $82,500,000. The order in the grain case will increase this about $14,000,000.

In arriving at these estimates we addressed an inquiry to each of the 35 important lines in western territory, asking them to make an individual estimate in each instance covering their own line.

Changes in Volume of Traffic

The traffic increased for several months after August, 1920, then began to go down and has been dropping more or less since, although at times it has shown an increase, but rarely up to the previous year. The prospects for the immediate future are not very encouraging for any considerable increase in traffic. While we hope that the bottom has now been reached, the November and December reports are very discouraging and we anticipate no substantial increase in tonnage before the coming of spring. The volume of traffic has not been materially affected, one way or another, by rate changes since August, 1920. Economic conditions are very largely responsible for the shrinkage in the volume of traffic. For example, building operations at Chicago, where practically all the necessary materials except lumber are produced within the city limits, are no different than in the country generally.

Increased passenger rates have not lessened travel to the extent of lowering net revenue. People paying full tariff rates today are largely those who can afford to do so and those traveling on business. The greater falling off in regular passenger traffic is in the coach travel where comparatively short hauls are involved and where the volume of the increase is in no way burdensome.

Economic Conditions Most Important Factor

The economic conditions that have obtained in this country and in the world at large since the great war have been the most important factor in retarding the movement of traffic.

Readjustments

The long established and generally recognized relationships in freight rates which were forced out of line by Ex Parte 74 percentage increase have, with but few exceptions, been readjusted. The unadjusted relationships are having active consideration. We do not consider that a mere difference in cents per 100 lb. in rates, when increased, is a relationship that should necessarily be readjusted. A recognized relationship or differential is such as fixed by agreement between carriers and shippers, or between the carriers themselves, or prescribed by state commissions or the Interstate Commerce Commission.

The carriers are not likely to be in position for some time to consider a general reduction in all rates. When the financial condition of the carriers will permit, it is our judgment that first consideration should be applied to specified commodities, among the great staples which are recognized as most important to the economic situation of the country and where the reduction would result in the greatest benefit to the public. It is true that the carriers are now proposing to reduce the rates 10 per cent on the most important agricultural products, but this proposition has not been submitted as warranted by our financial situation, but because we realize that the agricultural industry is in dire need and in the interest of all concerned we are proposing to make a contribution toward the anticipated rehabilitation of that industry.

To decide fairly what might be done, it would be necessary that the entire rate structure be analyzed, both class and commodity, to determine what rates, if any, are unreasonably low and should be advanced, and what rates, if any, are unreasonably high and should be reduced.

Commissioner Aitchison asked Mr. Chambers whether the roads expected, if the 10 per cent reduction on agricultural products results in a decrease in revenue below fair return, that it will be recouped to them out of future rates when traffic becomes normal. Mr. Chambers replied that the roads are willing to take their own chances for the six months period and hope within that time to get expenses down.

Hearing Adjourned Until January 9

At the close of the hearing on Saturday it was decided to adjourn until January 9, when the roads would complete their presentation of statistical testimony. It had been proproposed to call Mr. Aishton on Monday, but it was decided that his testimony could be postponed until January 9 so that those who had come to Washington from long distances need not remain over Sunday. Before the adjournment the representatives of shippers asked for a large amount of statistical information to be furnished by the railroads. Some of the information the roads agreed to furnish, but as to some they referred the question to the commission as to whether it should be furnished.

Commissioner Hall said that S. H. Cowan on behalf of Texas cattle shippers had presented a petition for a rehearing and modification of the decision in Ex Parte 74 but that such an application, applying to another proceeding, could not properly be made in this proceeding. Mr. Hall said that the commission had considered before ordering this investigation a proposal to reopen Ex Parte 74 and had decided not to do it, but to order this investigation instead. If, in view of this statement, Mr. Cowan desired to file his petition, it should be filed in Ex Parte 74 in the usual way and copies served on the other parties.

The commission later announced that the further hearing had been postponed from January 9 to January 11, and that the further program will be as follows:

Jan. 11-14 Direct testimony of carriers.
Jan. 16-18 Cross examination of carriers' witnesses.
Jan. 19-20 Coal and coke.
Jan. 21-23 Ore, furnace materials and iron and steel articles.
Jan. 24-25 Sand and gravel, brick, lime, cement, gypsum and asphalt.
Jan. 26-27 Lumber and forest products.
Jan. 28 Fertilizer and materials, sulphuric acid, phosphate rock.
Jan. 30-Feb. 4 Testimony of public and shippers as to general aspects of case.
Feb. 8 Vegetable oil and soap.
Feb. 9 Grain, flour and agricultural products.
Feb. 10 Live stock and packing-house products.
Feb. 11 Petroleum and petroleum products.
Feb. 15 Canned goods and wholesale groceries.
Feb. 16-17 Fruits and vegetables.
Feb. 18 Milk, cream and dairy products.
Feb. 20 Beverages and beverage containers, waste material.
Feb. 21-22 Other commodities.

Announcement will be made of dates for carriers' rebuttal evidence and for oral argument during but before the hearing is closed.

Accounts for Six Months Guaranty to Be Closed

December 31, 1921, Set as Date and Statements to Be Filed on or Before March 1, 1922

SIX MONTHS' guaranty in which December 31, 1921, is fixed as the date as of which all accounts pertaining to the guaranty period shall be considered closed for the purpose of computing the guaranty.

All carriers which accepted the provisions of section 209 of the transportation act, 1920, are required to file on or before March 1, 1922, final statements of amounts due to them or to the United States thereunder. Forms for rendition of statements are prescribed.

In the computation of railway operating income or any deficit therein for the guaranty period for the purposes of section 209 of the transportation act, 1920, the order says, the provisions of subdivision (f) of the section are provisions limiting the inclusion in guaranty computation of charges to operating expenses or revenues actually entered on the carrier's books of account under the accounting rules of the commission and do not contemplate any increase of or addition to such charges for the purposes of the guaranty settlement.

For the purpose of the guaranty, charges to operating expenses for maintenance will be limited to those applying to work done between March 1 and August 31, 1920, inclusive, and to charges accrued or equalized in accordance with the commission's accounting rules. No charges for deferred maintenance will be considered. Estimates of the net effect of deferred debit and credit items made by the commission and agreed to by carriers under the authority of paragraph (b) of section 212 will be considered in computing the guaranty.

A general rule is announced for the adjustment of differences in cost of labor and material in establishing the maximum amounts to be included in operating expenses for maintenance of way and structures and for maintenance of equipment for the purposes of the guaranty, and methods of adjustment for differences in amount and use of property are separately indicated for maintenance of way and structures and for maintenance of equipment.

At hearings before the commission counsel for the railroads had asked that the maintenance allowance be made on the basis of the expenditures necessary to keep up to the standard of the test period, although the work may not all have been done in the guaranty period but was postponed to some extent because of shortage of earnings or other reasons. They also contended for an allowance to cover the so-called inefficiency of labor, which was not sustained in a special report on that subject issued by the commission earlier in the year.

The report shows that $429,808,649 has already been paid on account of the guaranty and in its annual report the commission estimated that a balance of $105,000,000 is still due.

Report of Division 4

The report by Division 4 of the commission says in part:

The general rules for computing railway operating income or any deficit therein for the purposes of the guaranty are set forth in section 209 of the act, and, having under consideration the manner in which the railway operating income applicable to the guaranty period is to be determined for such purposes, we issued our order of June 10, 1920. In that order we provided, among other things, for the distribution of items of railway operating income or deficit between the guaranty period and other periods, and with respect to all carriers we required that all items of income classable under any of the accounts comprising the standard return, which under our instructions pertain to the guaranty period, audited during the guaranty period, and similar items audited in the accounts for the months subsequent to August, 1920, shall be distributed upon the corporate books to the appropriate primary accounts for the months in which audited, but that items pertaining to the guaranty period audited subsequent to August, 1920, shall be so recorded as to readily permit the totals thereof for each month to be separately stated.

We directed attention to the fact that carriers might state their income accounts on the basis of accruals and ordered that in computing railway operating income or any deficit therein for the guaranty period for the purposes of section 209, no charges to income will be permitted which relate to transactions originating prior to March 1, 1920, or subsequent to August 31, 1920, whether such charges represent actual expenditures or credits to reserve accounts created to reflect accruals. The carriers were informed that reserve accounts created to reflect accruals pertaining to guaranty period transactions would be closed out or adjusted on the basis of actual expenditures within such reasonable time after August 31, 1920, as we might determine.

More than a year has elapsed since the close of the guaranty period and there appears no reason why for the purpose of final settlement of the guaranty, reserve accounts created to reflect accruals pertaining to guaranty period transactions should not now be closed out by adjustment to the basis of actual expenditures pertaining to the guaranty period or corrected to reflect such estimates and adjustments as we are authorized to make under section 212 of the transportation act, 1920.

In our order of June 10, 1920, carriers were cautioned that while we are required to eliminate and restate operating expenses and revenues for the guaranty period to the extent necessary to correct and exclude any disproportionate or unreasonable charge to such expenses or revenues for such period, or any charge to such expenses or revenues for such a period, which, under a proper system of accounting, is attributable to another period, we are not authorized to initiate or include any charge applicable to the guaranty period which does not appear on the carrier's books of account at the time of the guaranty settlement. But in the adjustments proposed by carriers in the return to our order of October 18, 1920, as well as in correspondence and conferences concerning formulae or plans for determining maintenance and other allowances under subdivision (f) of section 209, many carriers have disregarded the principles which we then announced.

This error is apparently attributable not only to a lack of appreciation, on the part of some of the carriers, of the fundamental differences between the federal control period and the guaranty period in the method of settlement, but also to the failure to realize the fact that the adjustments of paragraphs (3) and (5) of subdivision (f) are solely provisions of limitation of amounts which may be charged by the carriers in computing railway operating income or any deficit therein for the purposes of the guaranty and do not in any sense contemplate allowances for such purposes in excess of amounts actually entered.

With the exception of showing separately items audited in the guaranty period which pertain to other periods and items audited in other periods which pertain to the guaranty period, for which provision is made in our order of June 10, 1920, the accounts for the guaranty period and for items audited in other periods which pertain to the guaranty period should be kept exactly as they should have been kept if there had been no guaranty in effect. In the computation of railway operating income or any deficit therein for the guaranty period for the purposes of section 209 we shall treat the provisions of subdivision (f) of that section as provisions limiting our consideration to the amounts actually charged on the carrier's books of account under the accounting rules prescribed by us pursuant to section 20 of the interstate commerce act, and we shall not for the purposes of the guaranty make or permit any increase of or addition to charges actually on the books in accordance with our rules.

In the case of deferred debits and credits which cannot as of December 31, 1921, be definitely determined, carriers will be required to submit estimates of the net effect of any and all of such items for our action under paragraph (b) of section 212 of the transportation act, 1920.

Under the provisions of subdivision (h) of section 209 of the transportation act, we have certified to carriers advances amounting to	$263,935,874.00
and under the provisions of section 212 of the act we have certified partial payments in the amount of	165,872,775.05
making a total for advances and partial payments combined of	$429,808,649.05

Final Statements to Be Filed Before March 1, 1922

The sum of advances and partial payments so certified is more than two-thirds of the total amount by us estimated as necessary to make good the guaranty to all carriers. We are required to make a definite ascertainment for partial payment purposes as clearly as we are required to make a definite ascertainment in final settlements. We shall require all carriers which accepted the provisions of section 209 of the transportation act, 1920, to file with us on or before March 1, 1922, final statements of amounts due to them or to the United States, as the case may be, under the provisions of section 209, and as a general rule no further partial payments will be certified until the information necessary for a final settlement is at hand. A complete set of forms for making the final returns required is hereto attached.

Upon consideration of the returns to our orders of October 18, 1920, and January 5, 1921, and as a result of investigations made for the purposes of the definite determinations required for partial payments under section 212 of the act, in addition to the facts considered in Finance Docket No. 1176, *Maintenance Expenses Under Section* 209, we are of the opinion that the allowances for differences that may exist between the cost of labor and material for the test period and for the guaranty period, respectively, cannot practicably be made upon the basis of any rigid rule or formula, but these allowances must be fixed by us in the exercise of a reasonable judgment upon consideration of all the relevant facts and circumstances.

Differences in Cost of Labor and Material

As we have pointed out in our report in Finance Docket No. 1176, there are some items of maintenance for which no allowance should be made on account of changes in cost of labor and material. We therefore announce the following rule for adjustment of differences in cost of labor and material in establishing the amounts which will be fixed by us as amounts which shall not be exceeded in charges to operating expenses for maintenance of way and structures and for maintenance of equipment, for the purposes of the guaranty:

There shall first be deducted from the maintenance expenses of the test period all amounts included therein for

(a) Depreciation,
(b) Retirements,
(c) Insurance.

The remainder, after being adjusted for differences in amount and use of property maintained, shall be multiplied by a factor representing the increase in the general level of cost of labor and material for the territories in which the lines of railway of the carrier are situated. To the product thus arrived at shall be added back the deductions hereinabove provided for, adjusted for differences in amount and/or use of property maintained. The resulting sum will be the amount to be fixed by us as that which shall not be exceeded in charges to operating expenses for the purposes of the guaranty for the aggregate of maintenance of way and structures and maintenance of equipment. The methods of adjustment for differences in amount and use of property are indicated separately for maintenance of way and structures and for maintenance of equipment in forms annexed.

Carriers in presenting their claims or statements of amounts due to or from the United States under the guaranty will be required to state under oath the increase in cost of labor and material for their respective territories and may support these statements by such statistics and representations as may to them appear proper. In the presentation of such cases it should be borne in mind that the fact that certain prices were actually paid for units of labor or units of material in the test period and the guaranty period, respectively, is not conclusive evidence that those prices indicate or measure increases in cost of labor or material for which "due allowance shall be made." The prices actually paid in either period may be affected by the relative competence of management, by standards of maintenance adopted, or by other causes not attributable to increased costs.

The allowances for increased compensation provided for in section 4 of the federal control act will be computed upon rates definitely approved by the President in each case. The treatment to be accorded such allowances in respect of retirements will be that contemplated by section 4 of the federal control act and not that provided by the "standard contract" if in any case the provisions of the "standard contract" do not agree with the provisions of the act. The additional allowance will be limited to additions and betterments to road, made with the approval of or by order of the President and completed and in operation on or before midnight on February 29, 1920, and to equipment delivered and in operation on or before said date. The benefits of section 4 will be extended to those carriers which were released from federal control prior to March 1, 1920, as well as to those which were under federal control until that date.

The provisions of this report and of the order to be issued in connection therewith will apply with the necessary changes, to settlement of the guaranty with the American Railway Express Company under subdivision (i) of section 209.

Some Interlocking Officers and Directors Authorized

THE INTERSTATE COMMERCE COMMISSION has issued a large number of additional orders authorizing railroad officers and directors to hold positions with more than one carrier. One of these orders authorizing common officers and directors among the companies comprising the New York Central System consisted of 42 typewritten pages. In the case of three directors of the New York Central, however, George F. Baker, William Rockefeller and Harold S. Vanderbilt, the commission declined to authorize them to retain at the same time directorships in competing lines and gave them until December 31 to make their elections as to which position or positions they will hold under the authority granted in the alternative and to report to the commission all pertinent facts in connection therewith.

George F. Baker was authorized to hold until further order of the commission the position of director of the New York & Long Branch and chairman and director of the Central of New Jersey and the position of director of either the New York Central and a list of subsidiaries named, or the Delaware, Lackawanna & Western, the Erie, and its subsidiary, the New York, Susquehanna & Western, or the Lehigh Valley.

William Rockefeller was authorized to hold until further order the position of director and member of the executive committtee of the Chicago, Milwaukee & St. Paul and the position either of director of the New York Central and its subsidiaries named, or director and member of the executive committee of the Delaware, Lackawanna & Western, and director of its subsidiary, the Greene Railroad.

Harold S. Vanderbilt was authorized to hold until further order the position of director of the Chicago, St. Paul, Minneapolis & Omaha and of the Chicago and North Western and the position of director of either the New York Central and subsidiaries or the Delaware, Lackawanna & Western.

Among the other orders issued by the commission were those authorizing common officers and directors of the lines subsidiary to or affiliated with the Northern Pacific: Authorizing Thomas De Witt Cuyler to hold the position of director with the Pennsylvania, the Long Island, the Atchison, Topeka & Santa Fe, the New York, New Haven & Hartford, the New York, Ontario & Western and the Rutland; authorizing Robert S. Lovett to be director of the New York Central and affiliated lines, the Illinois Central, the Yazoo & Mississippi Valley and the Central of Georgia, and director and chairman of the executive committee of the Chicago & Alton and of the lines comprising the Union Pacific System; authorizing officers and directors of lines in the Southern Pacific System to hold offices with different companies; authorizing James Speyer to be director and member of the finance committee of the Chicago, Rock Island & Pacific and the Baltimore & Ohio; authorizing James A. Peabody to be chairman of the executive committee and director of the Illinois Central, vice-president and director of the Delaware & Hudson and the Pittsburgh, Fort Wayne & Chicago, and director of a large number of non-competing roads, the American Railway Express Company and Wells, Fargo & Co.

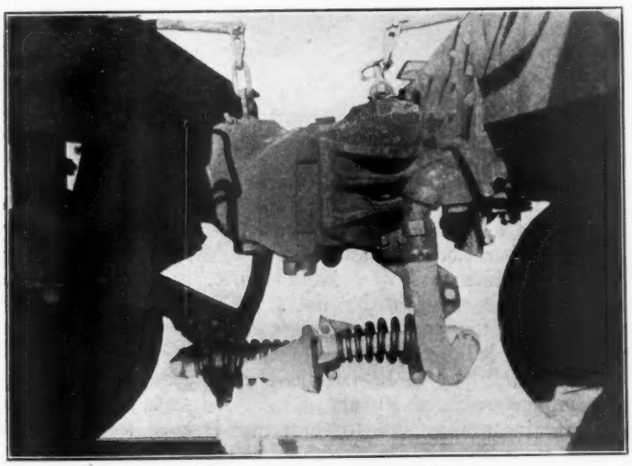
George T. Slade was authorized to hold until further order the position of director of the Northern Pacific and of the Southern and the position of director of either the Lehigh Valley and its subsidiary, the Lehigh & New York, or the Erie and its subsidiary, the New York, Susquehanna & Western.

The Development of the Robinson Connector

Latest Type Incorporates Improvements Suggested by Extensive Service of Earlier Design

THE COUPLING and uncoupling of cars, either passenger or freight, involves two operations; the engaging or disengaging of the couplers and the connecting or disconnecting of the train lines. The former operations are semi-automatic and are controlled by levers conveniently located at the sides of the car; the latter, however, must still be performed by hand, a method which involves some danger to the employees because it is necessary for them to go between the cars. Coupling train lines is one of the duties of the car inspector which consumes a considerable share of his time. Uncoupling the train line, which should be done by hand, is often neglected and the hose are allowed to pull apart when the cars are separated.

The loss of time in connecting hose and the bad effects of pulling them apart have led railroad officers to look to the automatic train line connector as the solution of these and other difficulties. In discussing the automatic connector a leading railway master car builder said: "There appears to be no room for argument about the need of such a device. The greater life of hose, the absence of broken train pipes resulting from uncoupling cars without first disconnecting the hose, the saving of time and labor in making up trains, and the reduction in the cost of pumping air, all of which might be classed as direct or apparent economies, would undoubtedly justify the cost of application alone, but the writer is even more impressed with the benefits that would be secured indirectly. Numerous leaks are found in hose and gaskets at all seasons of the year, almost entirely the result of the practice referred to above; viz., pulling the hose apart, thereby injuring the fabric and inner tube. In the cold weather, however, when the hose freezes, the difficulty in preventing air leakage becomes a controlling factor in the operation of long freight trains and they have to be reduced in length to a point where the air pressure can be maintained irrespective of the tonnage rating or the ability of locomotives to haul them. Even at the best, this factor is responsible for a very great amount of terminal detention and labor on the part of car men trying to stop leaks.



The First Robinson Connector, of the Pin and Funnel Type, Applied in 1910

"The connector increases the life of hose because it eliminates all mechanical wear. The hose is never jerked or strained. Frozen hose does not interfere with its operation and leakage and breaks are cut down to such an extent that it is possible to run longer trains."

The problem of the automatic connector was considered by the Master Car Builders' Association in 1908. A committee on this subject submitted a report which recommended a butting type connector with pin and funnel gathering device. From the time this report was issued until the present the Master Car Builders' Association and its successor, the Mechanical Division of the American Railway Association, have given little attention to this subject, although a sub-committee was organized in 1919. In this interval, however, there had been a remarkable development in train line connectors. Since 1910 over 1,000 cars have been equipped with the Robinson connector. Its present performance is such as to command careful consideration and as a history of the development of the device is essential to an understanding of the present state of the art, an account of the successive stages through which it passed will accordingly be given.

History and Extent of Service

In 1910 the first design of Robinson connector was applied to a passenger work train operating on the lines of the Washington Terminal Company, Washington, D. C. This connector was of the pin and funnel type, in accordance with the recommendations of the M. C. B. committee of 1908. Its service extended over a period of ten months and was satisfactory to the railroad officers in charge. Representatives of the Interstate Commerce Commission watched the installation and were so well pleased with it that the commission arranged for an official test of the connector on the lines of the Great Northern at Grand Forks, B. C.

The test was made on the Marcus division of this road, extending between Grand Forks and Phœnix, B. C. The trains hauled were heavily loaded ore trains. Fifty cars were equipped and run interchangeably with 140 unequipped cars. The grade was 3.3 per cent and the curvature in some places excessive, curves of 22 deg. being commonly encountered. Railway officers from various parts of the country were present; the Board of Railway Commissioners at Ottawa delegated representatives, and every conceivable test was made of the connector, each of which it met successfully. These tests definitely established at least one important fact; that this connector made and maintained a perfectly tight joint, thus greatly increasing the effectiveness of the air brake.

In submitting its official report on this test the Interstate Commerce Commission concluded as follows: "From information obtained in this test the conclusion is reached that the Robinson connector is a safe and practical device, which if properly installed and maintained, will meet the need for an automatic connector in general freight service and add to safety in train operation on the railroad using it.

"It is mechanically simple in construction and composed of few parts which are easily assembled. It is comparatively light in weight, and of ample strength to withstand all shocks to which it is likely to be subjected in ordinary service. Its gathering range is sufficient to meet all variations between cars in service where car couplers can be made to operate, and it will withstand severe distortion without damage when heads are forced together under conditions where car couplers will not operate.

"It will maintain a tight joint between connector faces, even when gaskets are worn to such an extent that they could

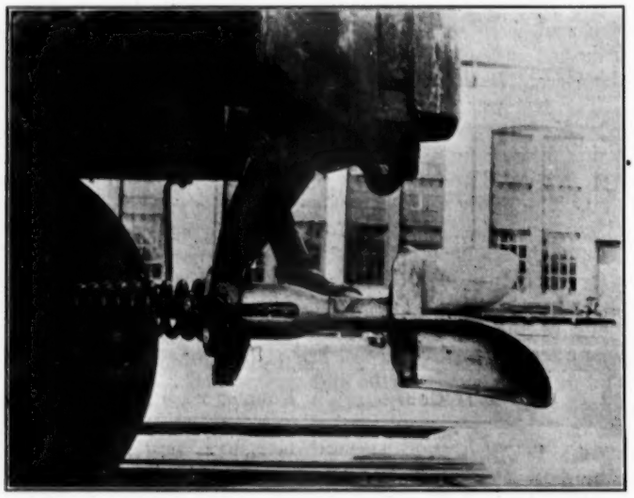
not be used with the standard hose coupling, and its use would materially reduce train pipe leakage."

Freight Connectors Installed on Canadian Northern

In view of this report by the Interstate Commerce Commission and in view of the favorable opinion of the connector expressed by its representatives, the Canadian Board of Railway Commissioners became interested in the device and requested the Canadian Pacific, Grand Trunk Pacific and the Canadian Northern to look into it.

As a result of this request four all-steel hopper cars on the Canadian Northern were equipped with freight connectors. Experience with the first design indicated that the pin and funnel type was deficient in gathering range and undesirable because the dimensions once fixed could not be altered. Consequently a new design, known as type B, was prepared using a gathering arrangement of the wing type. These connectors were installed by the Canadian Northern at its Winnipeg shops in May, 1914, and put in continuous service handling gypsum rock from Steep Rock to Winnipeg during the summer and in coal service between Port Arthur and Winnipeg during the winter months. These cars ran in this service for three years under the most severe track and weather conditions, especially in winter, the temperature from December to March ranging from 10 deg. to 45 deg. below zero. The test came to an end through a wreck on the Steep Rock line, destroying all four cars. No change of hose or gaskets had been made during the whole period and these parts were in good condition at the completion of the test. Reports issued each trip by the train crews handling these cars show no train leakage whatever and all concerned were greatly pleased with the device.

The second installation in Canada was made by the Canadian Pacific, which equipped one passenger train in service between Montreal and Ottawa in February, 1915, with type



Type B Robinson Connector, with Wing Gathering Arrangement

B connectors. This test proved satisfactory and resulted in equipping 125 passenger cars operating out of Place Viger terminal, Montreal, to Quebec, Ottawa, and Eastern Quebec points. These cars were equipped with the type C, an improved type resulting from experience with types A and B.

The Grand Trunk Pacific in April, 1915, equipped one passenger train in service between Winnipeg and Transcona, and three Hart cars in freight service between Fort William, Ont., and Transcona, Man., type B connectors being used. These tests were satisfactory and reports show the high esteem in which the connector was held by Grand Trunk Pacific officers.

Type C Connector in Passenger and Freight Service

In May, 1915, the Canadian Northern equipped a passenger train running between Winnipeg, Man., and Edmonton, Alta., which continued in service until March, 1917, under the most severe track and weather conditions to be found in America. During the winter of 1915 and 1916 temperature went as low as 55 deg. below zero in parts of Saskatchewan. This test proved so satisfactory that the Canadian Northern ordered equipment for 250 passenger cars and 200 freight cars, the latter to be used on the Duluth, Winnipeg & Pacific out of Virginia, Minn.

The new type C connector was supplied for these installations and the freight cars were equipped in February and

Type C Robinson Connector for Passenger Service

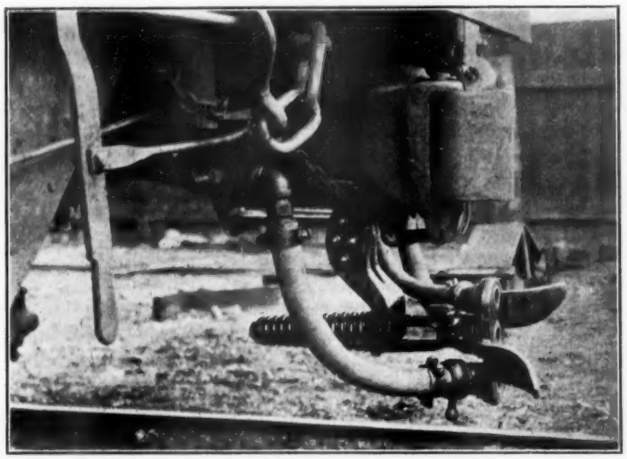
March, 1917. The 200 cars equipped were steel flat cars in log service between lumber camps of the Virginia & Rainy Lake Lumber Company and Virginia Mill. On the lumber company's lines cars were handled over skeleton track, an abnormally severe condition not to be duplicated in railway service, but the connectors operated satisfactorily without any sign of leakage. Between Virginia and Cusson, on the Duluth, Winnipeg & Pacific main line, cars were handled in complete trains of 40 cars and showed such a remarkable decrease in troubles due to train line leakage that all concerned were impressed with the advantages of the connector, especially in winter weather. No leakage whatever was found in the connectors, whereas similar trains operated over the same line and equipped with ordinary hose couplers showed continual delays on account of creeping brakes and poor brake operation due to train line leakage.

In 1920 two New York Central passenger trains and three locomotives on the Valley division at Dunkirk, N. Y., were equipped with type C connectors, where they continue to give satisfactory service. At about the same time 50 steel hopper cars, engaged in copper ore trade, were equipped on the Mineral Range at Calumet, Mich. The installation operated under extreme climatic conditions, such as excessively deep snow and very cold weather, and was discontinued only because the mines were forced to close through bad market conditions. The officers of the road who came in contact with the connector were greatly pleased with its service.

Extensive Installation in Through Passenger Service

From March, 1917, type C passenger connectors continued to be installed on all Canadian Northern trains operating west from Winnipeg, and further orders were placed by this road during 1919 and 1920, when all passenger equipment west of Montreal to Vancouver, B. C., was equipped. This covered trunk line operation amounting to 12,000 miles of railway and included transcontinental trains of 12 to 14 cars each, operating between Montreal and the Pacific Coast, a distance of 3,000 miles. This large installation was the first real trunk line operation ever attempted with any connector and resulted in experience with regard to the requirements for automatic connectors never before obtained.

As the result of this extensive experience, and the study given to connector design for more than 12 years, the Robinson Connector Company has developed a standard connector, embodying advanced features and refinements of design which only long and varied experience could make possible. While differing in refinement of details from the old type C connector, the same fundamentals of connector construction are found in it. It is stronger and more rugged; the gaskets are removable from the rear of the coupling head without parting the cars and the head is somewhat larger in anticipation of changes in the steam heating system now being advocated by many railways.



Latest Design of Passenger Connector, Type 2 H

Objects of the New Design

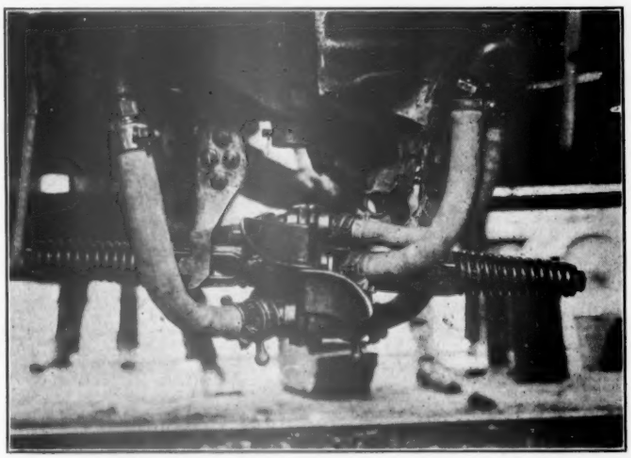
The objects which the Robinson Connector Company has sought to attain in the new connector are primarily the following: (a) a coupling head of size adequate to permit such needed developments in the head as time may demonstrate to be desirable, without affecting interchange with previous heads; (b) simplicity and speed in the renewal of defective gaskets without parting the cars; (c) a more rugged and powerful bracket and lug foundation for the connector; (d) a spring compression sufficient to compensate for the excessive wear between car coupler knuckles occasionally encountered; (e) increased size in the steam port opening; (f) a reduction in the number of gaskets used; (g) a greater gasket life; (h) to convey the air and steam through the connector head without it contacting with the head, thereby eliminating the necessity of making the head of air-tight material; (i) simplification of interchangeable manufacture.

The first of these objects has been attained by increasing the length and width of the head to 11½ in. and 5 in. respectively. Within this space the three ports may be arranged in any one of several ways. They may, for instance, be cored in the head or they may be formed of separate fittings and suitably mounted in the head, as in the case of the air brake port. These dimensions will readily accommodate any size of port which future developments in the air or steam line are likely to require. The air and signal ports may be increased to 1½ in., and the steam port to 2 in. opening without affecting interchange with previous heads.

Flexibility of Gathering Range

Another important feature of this type of coupling head is the flexibility of its gathering range dimensions. While there is very little about connector design that is not now known to connector manufacturers and to railroad men who have studied the question, it has not yet been determined what gathering range a connector should have to accommodate most efficiently the varied requirements of service. It is known, of course, that the passenger connector requires a greater gathering range than the freight. The passenger car being much longer, with a considerably greater overhang from truck center to end sill of car, the angle at which the connectors approach is more acute, and hence the gathering range must be greater. But since the conditions under which passenger cars operate are practically known factors, it is not a difficult matter to determine what gathering range the passenger connector should have.

With the freight car conditions are different, however. There are a great many different types and many different lengths of freight cars. They operate under the most severe conditions, being commonly hauled over track on which it would be impossible to run a modern passenger car. Moreover, freight cars receive the minimum of maintenance. These factors complicate the problem of determining what gathering range is most suitable for the freight connector. A dimension has been developed that has so far proved satisfactory, but how it would meet general freight service on hundreds of thousands of cars, only extensive installation can reliably tell.



Type 2 H Connectors in Coupled Position

The magnitude of the field for the freight connector and this inherent element of uncertainty as to one of its most important dimensions, point with emphasis to the necessity for a gathering range which may be varied at will without affecting interchange with previous units of the equipment.

This cannot be done with any type of pin and funnel connector. It is an inherent limitation in all pin and funnel heads that a gathering range once set cannot be changed. The freight and passenger gathering range cannot be dealt with separately with the pin and funnel head. The freight head must be as large as the passenger head, otherwise they will not interchange. A great waste of material and unnecessary bulk to the freight connector arises from this fact.

These are among the reasons which led this company to discard the pin and funnel head.

Flexibility of the gathering range dimensions is an inherent advantage of the wing type of head. The spread of the wings may be increased or decreased at will, with a corresponding change in the gathering range without affecting interchange with previous heads. The freight head, having but a single port, may be made to size and be given a gathering range best suited to freight operations, and yet interchange perfectly with the passenger head. The only dimension common to the two heads is the width of the face and the location of the wings with respect to the ports.

A great economy in first cost and maintenance results from this flexibility of design which avoids the necessity of putting metal that is not required into the freight head simply to get it to interchange with the passenger head.

All Gaskets Readily Removable

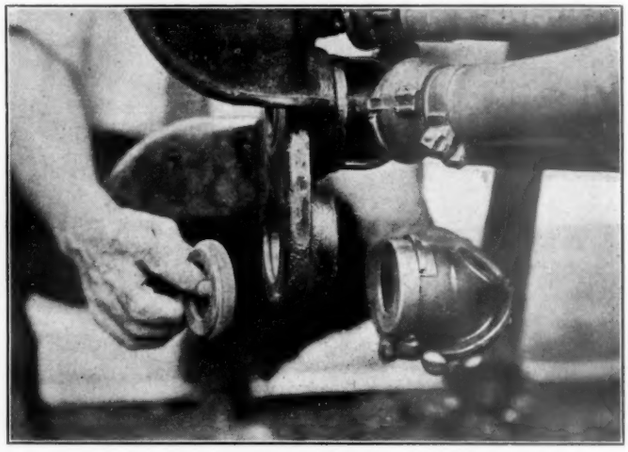
The second object, simplicity and speed in the renewal of defective gaskets without parting the cars, is attained in the new connector by mounting the signal and steam port gaskets in the face of the head and backing them up by the curved fittings *A* and *B* shown in the illustration. These are removably mounted in the head by a bayonet joint comprising dogs, *a*, on the head behind which the lips, *b*, on the fittings are rotated. The unions, *C* and *D*, for connecting the hose to these fittings are formed in a similar manner.

When it is desired to remove a signal or steam gasket the hose unions are opened and the fittings *A* and *B* are rotated out of the head. This exposes the gaskets which may then be readily removed through the rear of the head. Normally, each of these gaskets is under slight initial compression; in design they are of the air-expanded type. Thus, when the air or steam is admitted the gasket swells into absolutely air tight engagement with its seat in the head and against the front face of the fittings *A* and *B*.

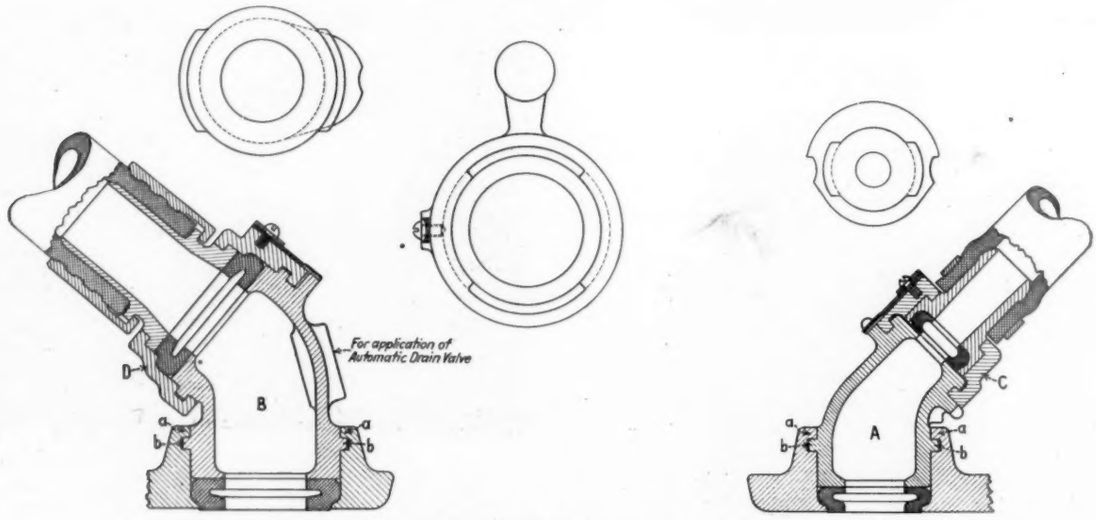
The removal of the brake port gasket is accomplished by a somewhat different process. Here the gasket is mounted in the forward end of a curved fitting, *E*, removably held in the connector pipe, *F*, which is pressed with the head, by a pin, *G*. When removal is desired, the pin is lifted and the entire fitting is removed from the connector. To accomplish this it is not necessary to open the union, *H*, by which the brake hose is attached to its fitting. This union is employed solely to facilitate interchange with a car not equipped with the connector. When the interchange period is over the union will be eliminated and the hose mounted directly upon the rear end of the fitting. This produces a simple and efficient air line arrangement.

Improved Design of Bracket and Lug

The third object, a more rugged and powerful bracket and lug foundation for the connector, is accomplished by lengthening the lug by which the connector bracket is supported from the car coupler. In the previous connector the lug was short and hence required a bracket of considerable length. The bolts attaching the bracket to the lug were spaced approximately 2 in. apart, while the distance from the center of these bolts to the center of the connector pipe was, for the Sharon coupler, 12 in.



Steam Connection Removed to Change Gasket



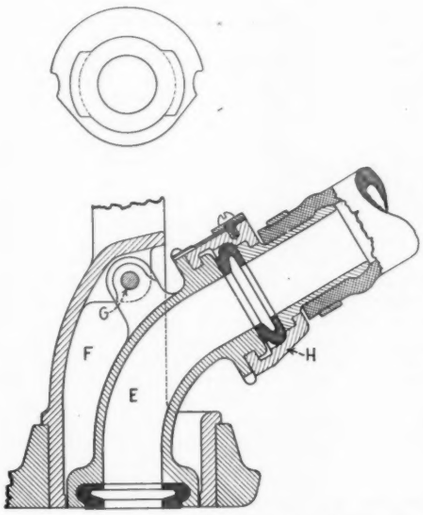
Details of Steam Heat and Air Signal Connections, with Removable Gaskets

This arrangement imposed rather high stresses upon the bolts in the lug and on the adjacent walls of the bracket, which sometimes loosened the joint between these parts. In the new connector the leverage ratio on the lug bolts has been reduced from 6 to 1 to 2 to 1, and instead of two bolts, four are used. The result is a dependable and powerful foundation for the bracket, a most important consideration.

The fourth object, a spring compression sufficient to compensate for the excessive wear occasionally encountered between car coupler knuckles, is attained by the use of a longer buffer spring and by increasing the length of the connector pipe. In the previous connector this compression was 1½ in., but long experience demonstrated that on account of excessive

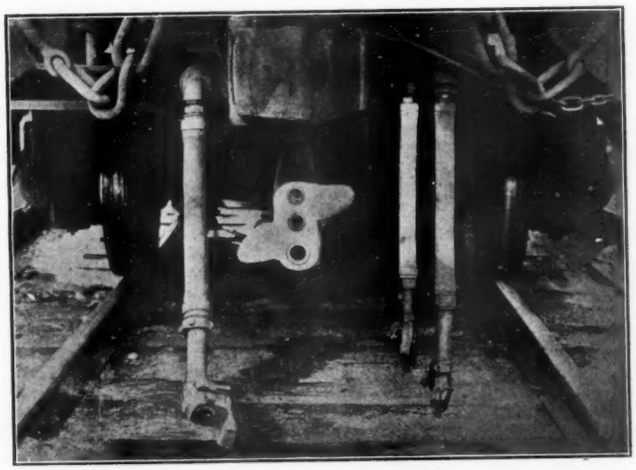
wear occurring in some coupler knuckles, this was insufficient. It was therefore increased to 2½ in., which permits of the maximum wear on the car coupler knuckles without affecting the rigidity and tightness of the joint between the connector heads in the slightest degree.

The fifth object desired was increased size in the steam



Details of Removable Brake Pipe Connection

port opening. In the previous connector this opening was 1½ in., which is the dimension widely employed for the present hand-hose coupling. The difficulty incident to properly heating long trains in excessively cold weather has brought about considerable discussion looking to a greater steam port opening. Since many railroad men are of the opinion that the steam port opening must ultimately be increased, an opening of 1¾ in. has been adopted in the new



Robinson Connector Fitted for Interchange with Standard Hose Couplings

connector. This dimension, however, permits perfectly satisfactory interchange with a connector head having a steam port opening of 1½ in.

The sixth object, a reduction in the number of gaskets used, is attained by using in the steam union the same gasket that is used in the steam port, and by using in the signal port, the brake port, and the brake union a common form of gasket. Thus in the freight connector but one type of gasket is used, a convenience of much practical importance.

The seventh object, a greater gasket life, is attained by giving greater body to the gaskets. In the previous connector the air gasket had a face width and a depth of ¼ in., while the width of the steam gasket face was ⅜ in., and the depth of this gasket was ¼ in. In the new connector, the air gasket has a face of ⅜ in. wide and the steam gasket a face ½ in. wide. The gaskets are also deeper than the previous design, and the general increase in size and resiliency insures a much greater life.

The eighth object, to convey the air and steam through the connector head without bringing it in contact with the metal of the head, is attained by the improvements previously mentioned. It will be observed from the drawings that the contents of each of the train lines is carried through the head without imposing any fluid pressure on the metal in the head and hence the requirement for an air-tight casting in the head is eliminated. In the case of the brake line, always, of course, the most important line, the air is carried through the head by the fitting *E*. Eliminating the necessity for making the head of air-tight material not only greatly facilitates its production and lowers its manufacturing cost, but makes it a much more efficient part.

The ninth object, simplification of interchangeable manufacture, is brought about mainly by the dimensions and design of the head of the new connector. Various developments may be made within the head without affecting interchange with previous units of the equipment. Forming the gasket seats in the manner shown and mounting the fittings in the head instead of making them an integral part of the head, not only simplifies foundry procedure, but greatly simplifies and reduces machining costs. From this simplification greater ease in maintaining interchangeable dimensions in the several parts naturally results.

Railroads May Not Evade Consolidation Provisions of Law

WASHINGTON, D. C.

IN DENYING the application of the Pittsburgh & West Virginia to issue its capital stock and assume obligation and liability in respect of certain securities in connection with the purchase of the property and franchises of the West Side Belt, the Interstate Commerce Commission takes occasion to discuss at some length the provision of the law relating to railroad consolidations. The application was denied upon the ground that the issue and assumption are not for a lawful object since the applicant has not obtained authority for the acquisition under Section 5 of the interstate commerce act, which is the section relating to consolidations, directing the commission to prepare a tentative plan of consolidation and providing that a proposed consolidation must be in harmony with this complete plan. The effect of the decision, therefore, is to declare that railroads desiring to effect what amounts to a consolidation in advance of the promulgation of the commission's complete plan may not accomplish their object indirectly by failing to make application under Section 5, but by basing it upon other sections of the act.

The Pittsburgh & West Virginia owns all the stock of the Belt Company and is now operating the road jointly with its own. An agreement between the companies dated September 1 provides that the Pittsburgh & West Virginia shall purchase all the franchises, corporate property, rights and credits of the Belt Company and in payment therefor deliver its own securities and assume the contingent liabilities and remaining indebtedness of the Belt Company. The stock so delivered to the Belt Company was then to be returned by it to the applicant in payment of indebtedness approximating $6,333,000 and in exchange for the stock

of the Belt Company. Thereafter the corporate existence of the latter was to be terminated.

The commission's report points out that the applicant had previously asked for a certificate of public convenience and necessity for the acquisition and operation of the railroad of the Belt Company, but the proceeding was dismissed on the ground that the proposals did not fall within the prohibition of paragraph 18, section 1. The applicant has not sought approval or authority for the acquisition under any other provision of the act. The commission says that under Section 20-a as a pre-requisite to the granting of the authority sought for the issuance of securities, it must find that the proposed issue is for some lawful object and the question, therefore, is whether the purchase and sale may lawfully be made without authority or approval under the provisions of Section 5. Section 5 gives authority to the commission to approve the acquisition by one carrier of the control of another in any manner not involving the consolidation of such carriers into a single system for ownership and operation. It then provides in paragraphs 4 and 5 for the preparation by the commission of a plan of consolidation and paragraph 6 authorizes consolidations which are in harmony with and in furtherance of this plan with the approval of the commission. The report of the commission then continues:

In the instant case it appears that the purchase by applicant and the sale by the Belt Company of the franchises and property of the latter are within the corporate powers of both companies and may lawfully be accomplished under the laws of the commonwealth of Pennsylvania. Nor is the acquisition within the prohibition of the "antitrust laws," for the two carriers do not compete, are connecting lines, and for some time have been under common control and management. The sole question, so far as this phase of the matter is concerned, is whether the purchase and sale may lawfully be made without authority or approval from us under the provisions of Section 5.

Paragraph (6), Section 5, uses the word "consolidate." Technically, a consolidation is sometimes defined as a union of companies where a new corporation is created to take over the powers and property of the consolidating corporations. We are of the opinion, however, that the word "consolidate" is not used in Paragraph (6) in a narrow sense, but that the language of the paragraph is broad enough to cover any form of union under which "properties theretofore in separate ownership, management, and operation" pass into the possession of a single corporation for ownership, management and operation. This matter is not of immediate importance, for if the proposed purchase falls outside the terms of Paragraph (6), it is certainly covered by Paragraph (2) which deals with the acquisition by one carrier of the control of another "either under a lease or by the purchase of stock or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation." The question has a prospective importance, however, if we decide that authorization of the purchase is necessary under Section 5, for no such authority may be granted under Paragraph (6) until we have adopted a plan of consolidation under Paragraphs (4) and (5), while there is no similar limitation upon action under Paragraph (2).

But applicant has not sought authority for the purchase and sale under Section 5, and the immediate question, as aforesaid, is whether the transaction can lawfully be consummated without such authorization. Two constructions of the above-quoted provisions of that section are possible. One interpretation is that they represent an attempt on the part of Congress to place in our hands complete control over the union of carriers engaged in interstate commerce; the other is that they are merely a means of affording relief from the operation of the "antitrust laws," or other restraining state or federal statutes.

Section 5 is a unit, its separately-numbered paragraphs dealing with analogous matters. Paragraph (1), which has to do with the pooling of freights and the division of earnings, begins as follows:

"That, except upon specific approval by order of the Commission as in this section provided, and except as provided in Paragraph (16) of Section 1 of this Act, it shall be unlawful for any common carrier subject to this Act to enter into any contract, etc."

It is thus definitely and unmistakably provided that an agreement for the pooling of freights or the division of earnings shall be unlawful unless and until it receives our specific approval. The corresponding language of Paragraph (2), which deals with union of carriers not involving consolidation into a single system for ownership, management, and operation, is not so easily construed. It contains no specific prohibition, but provides that whenever we are of opinion that it will be in the public interest, we shall have authority by order to approve and authorize such union. The language of Paragraph (6) is similar, for while it specifies the conditions under which consolidations "shall be lawful," it does not in terms state the conditions under which they shall be unlawful.

The provisions in question were made a part of the interstate commerce act by the transportation act, 1920. In case of ambiguity it is permissible, in interpreting a statute, to refer to the reports of Congress.

Aside from this extraneous evidence, the intent of the provisions may, we think, be determined by reference to internal evidence. Paragraphs (4) and (5) provide most elaborately for the preparation and adoption by the Commission of a "plan for the consolidation of the railway properties of the continental United States into a limited number of systems." When we have agreed upon a tentative plan of this character, it must be given "due publicity," including notice to the Governor of each state, and all persons must be heard who may file or present objections. Thereafter, and not until then, the final plan may be adopted and published.

Obviously, the preparation and adoption of a plan of consolidation under such instructions from Congress require deliberate and careful consideration of every railway property of the "Continental United States" from competitive, financial, commercial, and other points of view, so that each such property may with nicety be fitted into its appropriate place in the final scheme. Obviously, also, many consolidations which are not barred by the restraining provisions of the "antitrust laws" or other federal or state statutes may be wholly inconsistent with the plan and destructive of its purpose. Yet, if consolidations of this kind can now be lawfully effected without our approval, the conclusion is inevitable that the carriers may ignore Section 5 with impunity under similar circumstances, after the plan has finally been adopted, and thus bring quick disaster to its entire structure. It is impossible to believe that it was the intent of Congress to prescribe with such care the method by which this elaborate and comprehensive program shall be formulated and the principles by which it shall be governed, and at the same time leave open a door by which at any time it may be wrecked.

Beyond question, in the development of the transportation act, 1920, as a constructive measure for the solution of the railroad problem, great importance was attached by Congress to the ultimate consolidation of the carriers into a limited number of great systems, well balanced financially and of similar earning power but competing with each other and maintaining the existing channels of trade and commerce. In our opinion it was the intent of Congress that complete control over the situation should be in our hands, so that the working out of this constructive policy might be safeguarded in every possible way, and so that consolidations or other union of interests might not be effected without our consent.

Nor is the language of Section 5 inconsistent with this conclusion. In *Lewis' Sutherland on Statutory Construction* it is said, at pages 1149-1150:

A direction contained in a statute, though couched in merely permissive language, will not be construed as leaving compliance optional, when the good sense of the entire enactment requires its provisions to be deemed compulsory.

But it is unnecessary to rely upon this principle of construction, for when, in Paragraph (6), it is provided that "it shall be lawful" to consolidate under certain conditions, this is but another way of saying that consolidations in disregard of those conditions shall be unlawful. And in like manner, when it is provided in Paragraph (2) that we may authorize the acquisition by one carrier of control of another in any manner falling short of consolidation, whenever we are of opinion that such acquisition "will be in the public interest," this is equivalent to saying that authority for the acquisition shall not exist under other conditions.

If it had been intended that these provisions of Section 5 should merely afford a means of escaping from the restraints of the "anti-trust laws" and other state or federal statutes, much simpler machinery would have been devised for accomplishing the purpose. The "plan of consolidation" is incompatible with such an interpretation of the section and embodies a policy of far greater breadth and vision.

We conclude and find, therefore, that the proposed issue of stock and the proposed assumption of obligation and liability are for an object,—namely, the purchase by applicant and the sale by the Belt Company of the property and franchises of the latter,—which can not lawfully be accomplished without our authority under the provisions of Section 5 of the interstate commerce act. Until such authority is secured the application must be denied. This conclusion makes it unnecessary to consider in other respects the propriety of what is proposed.

Commissioner Potter dissented.

A Plea in Behalf of the Supervisory Officers

Railroads' Treatment of Supervisory Forces Singularly Out of Line with Their Merits

By J. L. Eldridge
Vice-President, Yardmasters' Association of America

AN EVENT occurred shortly after the railways came under government control which should have afforded the railway executives considerable material for thought, and that was the formation of organizations of supervisory officials—yardmasters, train dispatchers, station agents and mechanical supervisors. Organizations of these classes of railway employees came into existence practically over night.

The old stock argument about silver-tongued orators arousing the spirit of discontent and unrest among these men for the purpose of furnishing themselves with jobs will manifestly not apply in this case, for these organizations arose almost spontaneously as soon as coercive pressure was removed.

How are we to explain this singular phenomenon? The explanation is simple, and constitutes a grave indictment against the prescience and foresight of the railway executives as a whole.

During the progress of railway development the interests of these men and their peculiar importance in the railway industry had been lost to sight in the maze of a bureaucratic official organization. The yardmaster who, in the original railway organizations had been the right arm of the division executive now found himself removed to a great distance by the intervention of numerous minor staff officers, who in many instances had no practical knowledge of his problems, but who nevertheless exercised practically untrammeled authority over him.

During all these years he was made the victim of any number of manifestly unjust conditions, unjust differentials in wages, unjust discriminations in hours and petty tyrannies and exaction on the part of his immediate superiors from which there was no escape.

How often have we known of good, competent yardmasters who have thrown up the job and "gone back to the footboard," as the saying is, because the constant ragging by some minor operating official, who could not if his life depended upon it fill the yardmaster's job, made life miserable, and produced a mental attitude which detracted from the efficient performance of his work.

It was these abuses and acts of injustice arising perhaps from the indifference rather than the intention of the managements and which had been accumulating during a long period that finally resulted in the formation of national organizations of yardmasters, and other supervisory officers.

We have said at the opening of this article that the appearance of these organizations of supervisors should have furnished the railway executives with food for thought. One would imagine that they would at least have made some effort to analyze the factors which had operated to bring about such a situation, and having arrived at the cause of the trouble would have taken some steps to alter or palliate the offending conditions.

One would naturally suppose that they would have been astounded, not to say alarmed, to see the men who were directly responsible for the operation of their railways, suddenly grouping themselves in labor organizations. It is not in the records that they indulged in any such thoughts, at least so far as attempting to change the conditions which led up to this revolt are concerned. On the contrary, they reverted to past practices, only more so, as one might say.

On October 3, 1918, committees of yardmasters from all parts of the country, except the Pacific slope, met with the regional directors in Chicago. They asked for an eight-hour day and $250 per month.

President A. H. Smith of the New York Central, who acted as chairman, advanced the argument that it would be impossible owing to the shortage of man power to grant an eight-hour day at that time, and the yardmasters finding this unanswerable went back to their twelve-hour day.

Shortly after this meeting, there was issued by the director general a schedule of wages and working conditions for yardmasters. The wages were placed at a maximum of $250 and minimum of $200 per month for yardmasters, and a maximum of $240 and $175 per month for assistant yardmasters, and the application of the maximum or the minimum was left to the discretion of the executives on the individual properties.

My readers will doubtless say this was the time when the executives grasped their opportunity to challenge by a fair and just application of this award the necessity for the existence of labor organizations of supervisory officials. They did nothing of the sort, or at least in only a few instances.

The following is an example of what they really did. On several railways men who had carried the title of yardmasters for years were suddenly reclassified as assistant yardmasters and paid the minimum rate.

On one large Eastern carrier where the yardmasters had never been granted vacations, a vacation for the year 1918 was refused, although the director general's order granted it, and was not allowed until months afterward and then only after an appeal had been taken to the regional director. From all over the country came complaints to the effect that the award of the director general was being applied without any proper regard for the duties or responsibilities of the men involved. Some of these cases were straightened out on the property, others by the regional directors, but many of them owing to obstructionist tactics on the part of the local officials, and the then imperfect organizations of the yardmasters' association, dragged along until the railways went back to private management, and consequently, there are yardmasters in this country who have just claims arising from the improper application of the director general's award which run into thousands of dollars.

Is it any wonder when all of these things are considered, that the yardmasters and the other supervisory officials' organizations were able to present to the members of the Congress during the winter of 1919-1920, evidence sufficient to convince them of the necessity of including these classes in the labor sections of the Transportation Act?

It was once remarked to the writer that the supervisory officials were the non-commissioned officers in the railway army. With this we do not agree, but resorting to the same analogy we should say that at least two classes of these employees could with more justice be compared to the line officers in military organizations. These classes are the agent and the yardmaster. The general manager and his aides, which designation would cover all classes down to and including the trainmaster, constitute the general staff of the railway army in which the agent and the yardmaster are the

line officers. These are the men who are constantly in command on the firing line, and who are working day and night to execute successfully the orders which are being passed on to them by the various "aide de camps" of the general staff.

Marshal Foch in one of his lectures on the Principles of Modern War delivered many years before the late European conflict, defined a good corps commander "as one who could successfully carry out the instructions of his superiors under circumstances of which he was frequently the sole judge." One would have to search a long while before he could find a better definition of a good yardmaster. And then, to carry the military analogy further, the yardmaster is constantly faced by the two factors which form the basis of all strategy —time and space—and like the strategist, all his work and its results are based upon and conditioned by these factors.

If the railway terminals of the country were of a size proportionate to the maximum traffic, his problems would not only be easier, but he would be able to attain to complete victory, or in other words entirely eliminate congestion, rehandling and delay. But such is not the case, and so the best that he can hope to attain is only a partial victory, or a minimizing of the factors of delay and congestion. In this position he is like some strategist, whose combinations are perfect, but who is, owing to conditions of terrain, insufficient reserves, or other factors beyond his control, always robbed of the complete fruits of victory. He can checkmate his antagonist, and deal him staggering blows, but he is unable to annihilate him. Obviously, such a situation would call for the highest order of military talent, for the slightest error would be fatal.

It is the business of the yardmaster to move cars, and his ability to do this within the smallest possible pace and in the shortest duration of time determines his success or failure. Consequently, it is necessary that he should be first of all a competent switchman, and the business of switching cars, like golf, rifle shooting or horseback riding, cannot be learned by watching some one else perform. One must have the actual experience. And now right here, we wish to say a word for the yardmen employed in the terminals of this country. It has become almost a habit within recent years to assume that the railway workers no longer have a pride in their work, but are interested only in their pay checks. This is untrue of railway workers in general, and is particularly unjust to the men working in our terminals; for if there is one thing eagerly coveted by these men it is the reputation of being a good switchman, that is the ability to perform a given amount of work with the least number of moves, and consequently, in the shortest possible period of time.

In making yardmasters, the managements of some carriers overlook this class of employee entirely; with the thought perhaps that men taken from other branches of the service would be more loyal in case of labor trouble. In this we believe they make a grave error, for while the loyalty they have in mind will be called upon very infrequently, the efficiency which comes only from knowledge and experience is needed every day.

It is a fact well known to all who are conversant with the situation that the terminals constitute the weakest link in our transportation system. It was in these that the breakdown which occurred during the early years of the war was most serious in its results, and we are willing to predict that a resumption of anything like the traffic handled during the years 1915-1920 will result in a similar condition of blockade and delay in the movement of freight.

The reason for this is, of course, very simple and that is that railway traffic has outgrown the capacity and facilities of the terminals many-fold, and this condition cannot be improved at this time without the expenditure of many millions of dollars. The growth of cities and towns has resulted in restricting railway terminals to a size proportionate to the traffic of 30 or 40 years ago, and it is only by the purchase of much valuable real estate and costly engineering projects that this condition can now be overcome.

Imagine the expense incurred by reason of delay and damage in a terminal when a dozen classifications are made, and only three or four tracks available to make them.

Imagine the expense incurred by reason of trains standing outside terminals for hours because of the lack of available track room. The writer making a trip over one of our largest carriers during the winter of 1919-1920, counted 14 trains standing outside one of their biggest terminals.

And now we would ask the candid reader if he does not believe that the men who are entrusted with the duty of getting the best results under such conditions should be considered in the light of something more than a corporal in the railway army? Or whether he is not entitled to something more than five cents per hour more than a yard foreman, which is the basic rate recently offered the yardmasters by one of the largest carriers in the country?

Amendment to Transportation Act Opposed

WASHINGTON, D. C.

ALBA B. JOHNSON, president of the Railway Business Association, and Professor Emory R. Johnson of the University of Pennsylvania, representing the railroad committee of the Chamber of Commerce of the United States, testified before the Senate committee on interstate commerce on December 15 in opposition to an amendment of the transportation act to repeal the rate-making section as proposed in the Capper and Nicholson bills. Mr. Johnson opposed the Capper bill as a direct attack upon the earning capacity of the railroads, both in the proposed repeal of Section 15a and in that part of the bill which would restore to the states complete control over intrastate rates. Repeal of Section 15a, he said, would leave the commission without instructions as to rates that would yield an adequate income. The Railway Business Association, he said, believes that anything tending to destroy the full authority of the commission as conferred by the Transportation Act is contrary to public opinion. Inadequacy of revenue, he said, would inevitably in time bring about government operation and ownership of the railroads, which, in his opinion, would be the greatest calamity that could happen to the United States. The railroads must have adequate revenues, not only to maintain the railroad properties, but also to attract new capital, and the inability of the railroads to get new capital will continue so long as the return from railroad investment does not rise to the level of the return from competing securities. Moreover, he said, prosperity will not be restored until the purchasing power of the railroads has been restored. When the railroads are in prosperous condition, the entire business of the country is stimulated.

Professor Johnson asked a fair trial of the act. Repeal of sections which give the Interstate Commerce Commission authority to correct state rates when they discriminate unduly against interstate commerce, would limit the commission's ability to maintain rates permitting a free flow of interstate commerce, he said.

"The Chamber of Commerce of the United States holds," said Dr. Johnson, "that none of the provisions of the act should be repealed or amended at the present time. The Capper bill would cut the rule of rate-making out of the act, and would take away from the Interstate Commerce Commission the power it has been given to correct state rates that unreasonably discriminate against interstate commerce and interstate railroad rates.

"The rule of rate-making was put into the law because

of the belief that it was necessary for the maintenance of efficient railroad service and for the restoration of railroad credit. Manufacturers, shippers, and producers of all kinds had reached the conviction before the act was passed that the Interstate Commerce Commission should so regulate rates as to enable the carriers to earn enough each year upon the value of their properties to enable them to maintain them and to develop their facilities along with the growth of the business of the country.

"The Chamber of Commerce of the United States through its railroad committee and by a vote taken among the 1,400 business organizations within the chamber, formulated a rule of rate-making in 1919 which was similar to the one incorporated in the Transportation Act of 1920. These business organizations voted six to one for the rule.

"As early as 1917 the national chamber declared by referendum in favor of giving the Interstate Commerce Commission authority to regulate rates when these rates affect interstate commerce. This action of the chamber was reaffirmed in 1919. The chamber recommended that this principle be incorporated in the Transportation Act of 1920.

"The exercise of power by the Interstate Commerce Commission to correct unjustly discriminatory state rates is in the public interest. The statute does not take away from the state commissions their power to initiate rates, nor are the states prevented from adjusting railroad charges within the reasonable limits established by the federal act. The chamber believes that the Transportation Act should be given full and fair trial, and that when the act is changed it should be supplemented and rounded out."

Contract Work Under Fire Before Labor Board

Roads Defend Practice of "Farming Out" Maintenance Requirements as Legal and Economical

THE RIGHT OF RAILROADS to contract car and locomotive repair and maintenance work has been the subject of vigorous and at times bitter attack and defense during the past week in hearings before the Railroad Labor Board. Twelve cases, involving nine carriers which have contracted for either part or all of their repair or maintenance work and the labor organizations representing the classes of employees affected by the changes in management, were consolidated by the Board and hearings on the complaints of the organizations that these contracts were made solely to evade the rulings of the Board and the provisions of the Transportation Act began on December 19.

The first complaint to be heard by the Board, considered by both carriers and employees as more or less of a "test case," was that brought by the Railway Employees Department of the American Federation of Labor against the Indiana Harbor Belt, because that carrier had contracted with the Burnham Car Repair Company for the operation of all of its repair tracks and shop facilities. The Board's synopsis of the case, as presented to the Board by representatives of the Federated Shop Crafts, outlines the salient points in the complaint. It says:

> It appears that in January, 1921, the carrier contracted with the Burnham Car Company to take over and operate the repair tracks of the Indiana Harbor Belt, the railroad company retaining the car inspectors under their supervision. Immediately upon the assumption of supervision by the car company a reduction in wages was made and some of the work placed on a piece work basis. Seventeen men were laid off. The employees contend that the carrier's action was for the purpose of enabling them to avoid the payment of the rates established by the Board and that their action was in violation of the provisions of the National Agreement.

Frank P. Walsh Calls Contracts "Legal Frauds"

Frank P. Walsh, who will be remembered as the cross-examiner in the national agreements case, opened the employee's presentation by terming the contract made between the Indiana Harbor Belt and the Burnham Car Repair Company as a "legal fraud." The presentation of specific charges against both the carrier and the repair company was made by C. J. McGowan, vice-president of the Brotherhood of Railway Carmen, who alleged that the Indiana Harbor Belt had violated the national agreement with shopmen by: (1) declining to discuss grievances with the men or their representatives; (2) refusing to negotiate a new agreement with the representatives of the shopmen; (3) refusing to continue the national agreement until a new agreement could be negotiated; (4) forcing an individual agreement with the car inspectors; (5) changing the hours and wages of car inspectors without proper authority and without negotiation with the union's representatives or reference to the Labor Board; and (6) discharging men without proper cause and investigation.

At the same time he charged the Burnham Car Repair Company with: (1) refusing to deal with the local officers of the men's union; (2) relieving men without reference to their seniority; (3) discharging men without investigation; (4) changing the work day from eight hours to nine; (5) reducing the hourly rates of carmen to 66 2/3 cents; and, (6) installing piecework without an agreement with the men or their representatives.

George Hannauer Cross Examined

Mr. Walsh then commenced the cross-examination of George Hannauer, vice-president and general manager of the Indiana Harbor Belt, continuing for the greater portion of the Board's sessions on December 19 and 20 in an effort to prove that the contractors in this case were "dummy" contractors and that the only motive for "farming out" the work was the desire of the carrier to evade the orders of the Board and the provisions of the Transportation Act. Mr. Hannauer pointed out that the contractors had performed many jobs for the carrier in the past and were financially responsible, that they had solicited the repair work without word from him, that there was no connection whatever between the carrier or any of its officers and the contracting company, that he had conceived the idea of contracting this work and had not talked with anyone except the chief mechanical officer of the road before signing the contract, that the repair work at different points was contracted for at different times, culminating in a period of three months in the contracting of all of the road's car repair work, and that the carrier exercised no unusual or illegal control over the contractor's employees, the carrier's representatives in the contract shops being present merely to lay out the work desired by the carrier and inspect the work turned out. The move was made, he said, entirely in the interests of economy and efficiency, citing that the labor costs of the contractors on certain work averaged $17,497 a month, whereas the same work, estimated on the basis of the Master Car Builders' charges, would have cost the railroad $24,937 a month. The yearly

savings under the contract arrangement would amount to about $75,000, he added.

I. H. B. Contends Board Has No Jurisdiction in Case

The carrier's presentation in the case was directed by Mr. Murray who, in opening his remarks, filed a brief with the Board setting forth that it was the contention of the carrier that the Board had no jurisdiction in this case. In support of this position the brief pointed out that the labor provisions of the Transportation Act apply to disputes between the carriers and employees or subordinate officials *directly interested in these disputes.* The organization bringing this case before the Board is not directly interested in the dispute, it asserted, and therefore the Board had no jurisdiction in the case.

"While not admitting the jurisdiction of the Board," the brief continued in substance, "the Indiana Harbor Belt denies that the agreement with the Burnham Car Repair Company for the contracting out of the repairing of its car equipment was done to avoid payment of the rates of pay established by the Board, and denies that the contracting out of its repair work is in violation of any rule or working condition legally in effect between the Indiana Harbor Belt and its employees; but asserts that this agreement was made to accomplish economies and improvements in the operation of the carrier and is accomplishing and will accomplish these results. The Indiana Harbor Belt asserts that the Board has no jurisdiction over the Burnham Car Repair Company or the employees of that company, their wages or conditions of employment. The employees of the Burnham Car Repair Company under this agreement are not the employees of the carrier and there is no dispute likely substantially to interrupt commerce between the Federated Shop Crafts and the Indiana Harbor Belt arising out of the contracting of equipment repair.

"It is the position of the Indiana Harbor Belt that:

"(1) No jurisdiction has been vested in the Board to determine when and under what circumstances and upon what conditions the carrier may employ independent contractors to do work for it;

"(2) even if the men employed by the contractors under this agreement were construed by the Board to be the employees of the carrier, the employing of these men by the carrier on terms satisfactory to them would not create and could not constitute any dispute between the carrier and its former employees in whose behalf the complaint in this case has been filed;

"(3) the Board, by the terms of the act of Congress creating it, can only entertain jurisdiction upon the complaint of employees, organized or unorganized, where there exists an unadjusted dispute which can substantially interrupt the operation of the carrier; and such dispute must be one between the complaining employees and the carrier in which the complaining employees are directly interested.

Board May Become "Welfare Agency of the Employees"

"The phrase 'directly interested in the dispute,' occurring and reoccurring as a controlling condition wherever the jurisdiction of adjustment boards or of the Labor Board is defined in the Transportation Act, is manifestly placed in the Act with deliberate and mature intent. By the express terms of these sections, no employees or organization of employees can act or interfere or require action by the carrier or set in motion action by the Labor Board in respect to grievances, rules or working conditions, or wages or salaries, which do not directly interest such employees or organization of employees—it is not sufficient to create a right of such employees or organization of employees to act or interfere or complain to the Labor Board that they are indirectly or sympathetically interested in the grievances, rules or working conditions or in the wages or salaries of *other* employees or organizations of employees. The jurisdiction of the Board is confined to disputes between the carrier and its own existing employees in respect to the rules, working conditions, wages or salaries of their *own* employment—it does not cover the relations or obligations of the carrier tc ex-employees. It does not affect the free will of the carrier to discharge an employee, nor the free will of the carrier tc engage an employee. It dose not confer upon the Board power to dictate whom the carrier shall discharge or retain or whom the carrier shall employ. It does not affect the right of the carrier, in any department of work, to accomplish that work through an agreement with a contractor who furnishes the labor therefor—in fact, where the carrier can achieve economies by so doing, it is its clear duty to follow that policy. That the carrier has discharged a particular employee or has engaged a particular employee, or accomplishes the performance of work through a contractor of labor rather than by direct employment of labor, may sentimentally or sympathetically or from the standpoint of the maintenance or advancement of labor unions or labor welfare, *interest* the employees of the carriers, but it does not *directly interest* the employees of the carrier in respect to the rules, working conditions, wages or salaries of their *own* employment.

"There is danger that the Board may assert, or may by the employees be asked to assert, in exercising its jurisdiction, a too broad interpretation of this word 'interest' as used in this Act.

"If the mere existence of a concern or desire to accomplish a class advantage in the conflict between capital and labor is sufficient to justify a complaint to the Board by employees, then the functions of the Board in respect to the relations between the carrier and its employees are practically unlimited, and the Board becomes a welfare agency of the employees.

"It is respectfully suggested that this Act does not design to give the Board jurisdiction to adjust *any* disputes which may arise between the carrier and its employees in respect to any grievances which the employees may arbitrarily set up in their desire to promote their class welfare—and that the grievances referred to in this Act are grievances in direct respect to the employees' *own* working conditions, or in direct respect to the rules affecting the employees' *own* employment, or in respect to the employees' *own* wages or salaries—and that the word 'interest,' as it occurs in this Act, is used in a legal sense and not in a layman sense. If grievance under this Act is to be construed as embracing any strategic demands, which the employees as a matter of class interest may make and fortify by threat of a strike, as to whom the carrier discharges or employs, or as to whether the carrier procures its labor through a contractor or by direct employment, then the Board becomes in reality the supreme supervisor of the carriers in all matters pertaining to employment—and practically, through the weapon of a threatened strike, the employees of the carrier may confer or thrust upon the Labor Board jurisdiction of any issue whatsoever."

Former and Present I. H. B. Employees Satisfied With New Conditions

Under the subsequent direct examination of Mr. Hannauer by Mr. Murray, the history of contract work on the Indiana Harbor Belt was outlined and emphasises placed on the fact that the carrier has been since 1915 contracting part of its operation, notably its icing facilities, and always without criticism on the part of the employees. In reply to one question, Mr. Hannauer said that he believed that it was his duty under Section 404 of the Transportation Act to contract work wherever savings could be made by so doing.

In closing the carrier's case, Mr. Murray presented a petition of the car inspectors now on the Indiana Harbor Belt to the Board and stating that they were satisfied with their wages and working conditions, that they desired no change and that they were not opposed to the company's contracting its repair work. Another petition signed by all of the carmen employed by the contractors and stating practically the same facts, plus the statement that they desired no one to protest their situation, was also presented by Mr. Murray.

After vainly trying to establish the possibility of future collusion between the contractors and Mr. Hannauer to bring the costs of repair work up, Mr. Walsh presented numerous affidavits of former employees of the carrier to prove that the petition presented on behalf of the carrier's car inspectors was obtained from the men under threat of losing their position. It developed, however, that the affidavits were dated in April whereas the petition of the men was dated in August, six months later.

Mr. Walsh Summarizes Employees' Case

The salient points in the carriers' and the employees' positions in all of these controversies were brought out in the closing arguments of Mr. Walsh and Mr. Murray in Indiana Harbor Belt case.

Mr. Walsh in an impassioned plea for a decision declaring the employees of the contractor to be still the employees of the carrier and therefore subject to the rulings of the Board and the provisions of the Transportation Act and terming the contracts already made as illegal, said that this case deals with the fundamentals for which the Board was created, the insuring of justice to railway employees. The form of the contract, he added, indicated that it follows "a form of contract used by the railroads throughout the country as part of a general plan to evade the rulings of the Board and the provisions of the Transportation Act." Should this contract be adjudged legal by the Board there will be nothing to prevent the carriers from contracting all of their operations, thus nullifying the labor provisions of the Transportation Act, he pointed out.

S. C. Murray Presents Carriers' Case

Mr. Murray, in closing the carrier's case, pointed out that the labor organizations represented by Mr. Walsh could have no standing before the Board in this case inasmuch as the employees of the contractor had specifically stated that they did not want their case brought before the Board and the men who were formerly in the employ of the company and who had gone on a strike when the change was announced had no right to representation before the Board according to its previous rulings. The contract itself was defended by Mr. Murray under the "independent contractor" laws of the country. He cited many decisions of the Supreme Court and rulings made under the Federal Employers Liability Act in support of this defense. These decisions showed that railroad foremen could direct the work of the contractor's employees without changing the relations between the contractor and his employees and the railroad and its employees. Furthermore, he added, the contract does not violate the national agreement for there is nothing in the national agreement holding that the railroads have no right to contract work. Mr. Walsh's "fraud" charge was refuted by reference to the contract made in 1919 by the road for the operation of its icing plant. Then, Mr. Murray said, there was no reason for evading either the rulings of the Board or the provisions of the Transportation Act for neither were in existence at the time.

Whole Controversy Based on I. H. B. Presentations

With the close of arguments in the Indiana Harbor Belt case, on which both employees and carriers had concentrated their respective arguments on the principles involved, the presentation of evidence in similar cases between other carriers and the organizations representing the men affected by the changes, was given rapidly. In every case the testimony closely followed the attack of the employees and the defense of the carriers in the Indiana Harbor Belt controversy.

The complaints of the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers against the Chicago Great Western, the St. Louis-San Francisco, the Colorado & Southern, the Indiana Harbor Belt, the Chicago, Milwaukee and St. Paul, the Chicago & North Western and the Great Northern and the complaint of the Federated Shop Crafts against the Gulf Coast Lines were quickly disposed of in this manner.

E. F. Grable, president of the maintenance of way organization, in stating his contentions, brought forth the additional charge that the carriers in contracting their maintenance of way work were not only violating the Board's orders and the provisions of the Transportation Act, but were also evading the supervision of the I. C. C. over expenditures.

In defense of the Indiana Harbor Belt's contract for maintenance of way work, Mr. Hannauer presented statistics to show that although more actual work has been done on its right of way in the period from April 1 to September 30, 1921, under the contract arrangement than in the corresponding period of 1920, when the work was done by railroad forces, the man hours expended decreased from 691,080 to 374,068, and the cost to the carrier decreased from $359,015 to $133,104.

L. K. Sillcox, general superintendent of motive power of the Chicago, Milwaukee & St. Paul, testifying in defense of that carrier's contract for unskilled laborers' work at four engine terminals, stated that under the terms of the contract the carrier saved $47,714 per year. Under cross examination, Mr. Sillcox stated that largely because of the restrictive rules of the national agreement and the wage rates fixed by the Board it was impossible to do the necessary work for less than $11.20 per engine whereas the contractor arbitrarily offered to do the work for $9 per engine. The contract was made, he added, to effect this saving and under the requirement of the Transportation Act for economical operation.

The Erie's Contract Shop Work

Hearings on complaints of shopmen on Erie against that carrier's contracting of its shop work at Hornell, N. Y., to the Hornell Construction and Repair Company and at Marion, O., to the Railway Service Company were before the Board on December 20. The testimony in this case was comparatively brief and followed in general the testimony given by both carriers and employees in the previous case. Ben B. Hooper, vice-chairman of the Board, asked H. A. Taylor, general solicitor of the Erie, if it was the carrier's position that legally it could contract all of its operations. Mr. Taylor, however, refused to express an opinion on points which were not before the Board, but called attention to the fact that there might be a dividing line based on the character of the work which would make impossible theoretical or practical contracting of all railway operations.

Walsh Closes Hearings for Employees

In closing this series of hearings for employees Mr. Walsh cited two reasons why he believes the railroads cannot successfully contract work: First, because stockholders of railways would not stand for allowing property to get out of their legal grasp; second, the alleged admission of efficiency on the part of the railway executives through giving work to outside companies would bring the railroads before the government and they would lose their charters.

Hearing on the temporary injunction granted to the Pennsylvania against the Labor Board, described in the *Railway Age* of December 17, page 1216, scheduled for

December 21, has been postponed until January 3 by mutual agreement.

Missouri & North Arkansas Before Board

J. C. Murray, receiver for the Missouri & North Arkansas, filed a petition with the Labor Board on December 21 asking for authority to cut the wages of employees 25 per cent in order to resume operation of that road. The road ceased operations on July 31 after a long controversy with its employees and between the courts and the Labor Board. In filing this petition Mr. Murray outlined a special wage reduction plan which he had submitted to the employees in October and which they turned down. This proposal was to resume operations immediately with a 25 per cent wage cut with the understanding that if at the end of the year there was any surplus left, after paying expenses, taxes and interest this surplus will be divided among the employees up to the point where their wages are comparable with the wages paid on other carriers.

The Seriousness of the Egg Claim Situation

By Albert L. Green
Special Representative, Freight Claim Prevention, American Railway Association

FOR THE FIRST SIX MONTHS of this year the amount paid out in egg claims by the railroad companies averaged $90,000 a month, and by the American Railway Express Company, $50,000 a month. Approximately 80 per cent of these amounts represent damage which could easily have been avoided by the more careful handling of egg crates on the part of the transportation employees, and by closer attention to the packing and loading of the crates in cars by the shippers. Only a fraction of the damage was due to wrecks and derailments, the exact amount reported by the railways for this six months' period being $9,049 or less than 2 per cent of the total. The remainder may, therefore, be said to be wholly within the control of the shippers and the carriers.

Comparing this year's figures with those of 1920, when extraordinary conditions, such as peak prices and the switchmen's strike, contributed to the record figure of $2,500,000 in egg claims, the lower prices and more favorable transportation conditions now prevailing would seem to point to a greater reduction than is now in sight. Much encouragement, however, is to be drawn from the decided improvement noted in the preparation of shipments for movement by express and, in certain localities, by freight. In Tennessee, for instance, a particularly serious egg claim situation has been almost entirely adjusted, and eggs from that territory are now reaching the market in first-class condition.

By no means do the carriers claim that all of the trouble is due to the lack of care on the part of the shipper. They recognize that the majority of claims arise from causes for which the carriers alone are responsible, and we think it is safe to say that there is not a freight or express carrier in the country that is not putting forth its best efforts to render safe and satisfactory service.

It is clear, however, that the shippers do share some responsibility in the matter. To insure safe transportation, eggs must be packed right. What constitutes "right" packing is open to discussion. Heretofore it has been considered that the honeycomb filler, when new and of standard quality and packed with excelsior pads of the proper weight, should protect the eggs with the minimum of damage under ordinary conditions. But a study of the reports of inspections made by the railroads and express companies at the market points, develops a serious question whether the point of maximum safety has actually been reached.

The egg case pad was first introduced to the trade in 1903, and shortly thereafter its use was officially recognized by the Consolidated Freight Classification. The pad at that time weighed 145 lb. to the thousand. It was then thought merely necessary to use a quantity of loose excelsior which had ordinarily been used in the packing of eggs, and no particular thought was given to the necessity of compressing or tying the fillers within the case so as to prevent the shifting of the contents. From time to time suggestions came to the manufacturers from the trade that thicker pads would offer greater resistance to breakage, and accordingly the weight of the pad was increased, first to 160 lb., then to 180 lb., and finally to 235 lb. per thousand, which is the weight now in general use. Two years ago it was found that the introduction of a third pad, usually inserted beneath the top filler, was effective in reducing damage and it was not long before the majority of shippers adopted the 6-pad pack in preference to the 4-pad pack previously used.

On October 12 and 13, at the research laboratory of the Chicago Mill & Lumber Company, Chicago, a series of tests were made under the observation of representatives of the National Railway & Express Committee on Egg Breakage; the Freight Container Bureau; the U. S. Department of Agriculture; the Live Poultry and Dairy Shippers' Traffic Association; the National Association of Egg Case and Egg Case Filler Manufacturers; and the National Poultry, Butter and Egg Association. The objects of the test were, (1) to determine whether the present honeycomb filler should be strengthened; (2) to measure the comparative protection afforded by the excelsior pad now in use as against a thicker and heavier pad; and (3) to compare the 4-pad pack versus the 6-pad pack. Egg cases of standard construction and of standard fillers, flats and pads taken from the regular stock, and only sound eggs were used. All cases, with a single exception, were subjected to a 20-min. test on a shaker machine.

At the conclusion of the tests the newly organized National Railway and Express Committee on Egg Breakage held its first meeting and discussed all phases of the egg claim problem. This committee recommended that a pad weighing not less than 250 lb. per thousand should be prescribed by the Freight and Express Classifications; that the trade marking of fillers would help prevent the use of under-standard fillers, since it would enable the carriers' inspectors to identify the manufacturer of fillers below grade, which would lead to the product being condemned for transportation purposes; that the present standard honeycomb filler, when used with six pads, affords all the necessary protection, and until the heavier pad has been thoroughly tried out in practice, consideration should not be given to increasing the weight of the filler; also that much better results would be secured if all shippers now using the 4-pad pack would follow the practice of the majority and use 6 pads to the case.

The extensive use of second-hand fillers presented the most complicated problem which came before the conference. Many schemes for eliminating their use were discussed and the subject has been left open for consideration at a future meeting.

THE CANADIAN PACIFIC, for the first time, is planning to use New York as a port of departure for its passenger steamers. During the war twelve of the company's steamers carried troops and supplies from New York. The "Empress of Scotland," 25,000 tons, leaves on February 4, and the "Empress of France," 18,500 tons, on February 11, both on Mediterranean cruises. The "Empress of Britain," 15,850 tons, which brought home the 27th Division of the American Expeditionary Forces, will go on two West Indian cruises, one on January 21 and the other on Feb. 21.

Loading Guides Solve Difficulties of L. C. L. Freight

Pennsylvania Aids Shippers by Introducing Improved Method for This Service

To expedite the forwarding of less-than-carload freight in so-called trap or ferry car service from points in the central region to all points on the system and connecting railroads loading guides have been prepared by the Pennsylvania Railroad, which show in a simplified manner the correct loading to be followed. These guides have been distributed to all ferry or trap-car shippers in the central region and after six months' trial the majority of shippers served by the road have permanently adopted them. Efforts are now being made to secure the co-operation of all others using the trap or ferry car service.

The results already accomplished have exceeded expectations. The railroad men and the shippers who have adopted the plan feel assured that it provides an efficient and expeditious method for the handling of miscellaneous freight in less-than-carload quantities which, unless loaded in a systematic way as regards destination and intermediate transfer points, is necessarily subject to frequent handling and delay en route.

Markers Indicating Routes Simplifies the Sorting of Freight

The Plan

Freight cars which are loaded by shippers at their plants with miscellaneous less-than-carload shipments are known as ferry or trap cars. Prior to the preparation of the loading guides this freight was loaded indiscriminately; shipments destined to eastern points, for instance, were loaded in the same car with miscellaneous shipments destined to western points or southern points. This indiscriminate loading made it necessary to move cars to adjacent freight stations or nearby transfers where they had to be unloaded, the shipments sorted and then reloaded either to more distant transfer points or destinations.

By using the loading guide the shippers can readily ascertain the proper transfer to which their shipments should be loaded to secure the best possible service. With this information they are able to assemble their shipments and so regulate their loading that the car can be forwarded to the transfer which will accord the best service. This direct loading greatly reduces the handling of the shipments at intermediate points and eliminates the delay previously experienced with the indiscriminate loading.

A feature of prime importance is that shippers have found that the simplicity of the guide renders its use general throughout their loading departments. Moreover, shippers find that it is advantageous to them to hold their shipments several days and assemble a load for a proper transfer, because of the improved service that accrues by such arrangement in that the shipments reach their destinations more promptly when compared with the old plan.

Advantages of the Plan

Industrial plants which have adopted the new plan report from the viewpoint of the shipper, the following advantages

Shipments reach customers in much less time as delays at local stations and transfers are eliminated.

Owing to reduced handling at transfer points goods not only arrive at destination more quickly but also with the package in better condition.

There is less opportunity for incorrect loading and freight going astray.

The improved service and reduction of errors in loading have virtually eliminated the necessity for tracing.

It affords the shipper an intelligent system for supervising his own loading.

The plan is so flexible that the individual shipper can set up a ferry-car program to meet his own peculiar needs.

From the point of view of the railroad the new loading plan offers the following advantages:

The indiscriminate loading of miscellaneous freight is in a large measure eliminated.

Important economies are made possible because of reduced handling of freight at origin freight stations and intermediate transfers.

Less handling of freight has resulted in a marked decrease in claims for loss and damage.

By reducing the number of days ferry cars are detained while awaiting unloading the car supply situation is improved. This is a very important factor particularly during times of car shortage.

Congestion is relieved at many local stations which, as a rule, are without facilities for reclassification of less-than-carload freight.

Actual Results Shown

There are 24 guides covering 180 ferry car shipping points in the central region. Each guide contains some 40 pages of loading instructions.

A report shows that of the 16,498 ferry cars forwarded from the stations of the central region during the first six months of this year more than one-half—8,425 cars to be exact—were hauled to the proper transfer, direct to the connecting lines, or direct to destination without the former intermediate rehandling. The remaining 8,093 cars were loaded to preferred intermediate transfers, in many instances, in conformity with the ferry car guides.

Some details of the practical advantages for the shipper under the new method of loading and routing freight are summarized in the following statement:

"This ferry car loading arrangement has resulted in a 100-per cent improvement in the prompt delivery of goods to our

Loading a Ferry Car at Jacob Dold Packing Company's Plant, Buffalo, N. Y.

customers. Furthermore, since we rearranged our shipping platforms in accordance with the ferry car guide for this district the requests for tracers from our customers have been practically eliminated.

"The fact that our tracers will decrease, this year, from 2,000 to less than 500 indicates that the new arrangement works to prevent incorrect loading and freight going astray. Because the goods are transported with much-reduced handlings at transfer points the shipments not only arrive at destination more quickly but they also arrive with the packages in better condition.

"Another advantage of the plan is that it offers the shipper an intelligent system for supervising his own loading. Through his own shipping department he can classify his packages, stow them securely in the cars and give his outgoing freight much more careful attention than one could expect from a congested railroad transfer point where many consignments of freight have to be sorted and re-shipped every 24 hours.

"Prior to the installation of the present system a delay of a week or more in getting freight reclassified and forwarded to the transfer was not uncommon. All such delays are eliminated by using the new ferry car guide. Frequently a delay of a few days on our shipping platform is more than offset by the saving of from 10 days to two weeks in time of arrival of the consignment at the ultimate destination."

The following summarizes a report on the handling of ferry cars from central region stations between January 1 and June 30, 1921:

Direct to destination	Direct to connecting lines	To proper transfer	To first preferred transfer	To second preferred transfer	To third preferred transfer	Total cars handled
3,304	1,487	3,634	5,286	1,156	1,651	16,518

Loading Ferry Cars at a Manufacturing Plant After Freight Has Been Sorted on the Loading Platform

From Pittsburgh district stations—i. e., those within a 50-mile radius from the city—the following results were shown for the month of June, 1921:

Direct to destination	Direct to connecting lines	To proper transfer	To first preferred transfer	To second preferred transfer	To third preferred transfer	Total cars handled
324	133	329	495	113	164	1,558

How the Guides Are Used

Copies of the guides have been distributed to more than 500 shippers. Each guide contains an alphabetical list of agency stations on the Pennsylvania System, together with assigned station numbers and loading directions showing the proper transfer to which freight from that territory should be loaded. Column 1 names the proper transfers serving destination direct. Shipments so loaded will be transferred only once en route to destination. Columns 2, 3 and 4 name, respectively, the intermediate transfers in order of their preference in case industries are unable to assemble sufficient tonnage to justify loading to the proper transfer named in column 1.

To promote the widest possible use of the ferry car guides, each division freight agent in the central region has been instructed to give personal attention to the following program:

"First—See that every ferry car shipper in his territory has a copy of the guide.

"Second—Be certain that every shipper clearly understands the purpose of the guide, how to use it, and the advantages to be derived.

"Third—Make careful observation of ferry car operations in his territory to determine whether or not the guide is being used properly.

"Fourth—When reports indicate that shippers are not loading their shipments to best advantage, an analysis of their tonnage will be made to develop in what way an improvement can be made, and a personal interview arranged with shippers."

With practically all ferry car shippers in the central region loading their freight in accordance with the guides it is confidently expected that all ferry car freight can be handled without delays at transfer points even during times when the movement of freight is very heavy. This expeditious movement of less-than-carload freight will bring about greatly improved service to consignees.

The loading guide contains an alphabetical list of agency stations on the Pennsylvania System. Opposite the name of each station is an assigned station number. Loading directions are then given for the various station numbers which show the proper transfers to which less-than-carload freight should be loaded to insure the most expeditious and efficient handling.

The following extract from loading guide No. 1 illustrates

The Larkin Company, Buffalo, N. Y., Uses Colored Shipping Orders and Tags to Identify Freight to Be Shipped in Ferry Cars

the alphabetical arrangement of the stations and their assigned numbers:

ALPHABETICAL LIST OF STATIONS

Station Number	Station		Division
639	Merchantville	N. J.	Trenton
6109	Merrill	Pa.	C. & P.
6843	Merritt	Mich.	Mackinaw
8228	Merritt	Ohio	Wheeling
6561	Metham	Ohio	Akron
248	Metuchen	N. J.	New York
247	Metuchen Interchange	N. J.	New York
6512	Metz	Ohio	Akron
7858	Mexico	Ind.	Fort Wayne
1115	Mexico	Pa.	Middle
8055	Miami City	Ohio	Cincinnati
8020	Miamiville	Ohio	Cincinnati
6846	Michelson	Mich.	Mackinaw
5087	Mickleton	N. J.	W. J. & S.
3177	Middleburg	Pa.	Sunbury
262	Middlebush	N. J.	New York
7689	Middle Fork	Ind.	Louisville
6000	Middlepoint	Ohio	Mansfield
2755	Middletown	Del.	Delaware
7424	Middletown	Ind.	Richmond
8125	Middletown	Ohio	C. L. & N.
1057	Middletown	Pa.	Philadelphia

How the proper loading directions for any given point on the Pennsylvania may be ascertained by means of its assigned number is indicated in the following extract from the loading instructions of Guide No. 1:

Stations	Proper transfer 1	First preferred 2	Second preferred 3	Third preferred 4
56 to 264	Harrisburg	Pittsburgh		
268 to 547	Philadelphia	Harrisburg	Pittsburgh	
550 to 746	Camden	Philadelphia	Harrisburg	Pittsburgh
758 to 810	Philadelphia	Harrisburg	Pittsburgh	
826 to 1074	Harrisburg	Pittsburgh		
1081	Altoona	Pittsburgh		
1084 to 1091	Harrisburg	Pittsburgh		

Column 1 names the proper transfers serving destination direct. Shipments so loaded will be transferred only once en route to destination.

Columns 2, 3 and 4 name the intermediate transfers in order of their preference. If industries are unable to assemble sufficient tonnage to justify loading to the proper transfer named in column 1, freight should be loaded to the transfer named in column 2. If insufficient to load to transfer named in column 2, then load to point named in column 3, and so on.

If an industry is unable to assemble sufficient freight to warrant loading a car direct to a connecting line via the proper junction, freight should then be loaded the same as provided for the station at which the Pennsylvania System delivers the shipment to such connecting line.

Instructions for Shippers

Directions for use of the loading guides include the following:

"When an industry has sufficient freight to forward a car daily, tri-weekly, semi-weekly or weekly to one destination station or for loading in station order to one division, freight should be loaded and forwarded direct. This arrangement will avoid rehandling at a transfer station, thus resulting in improved service and eliminating to a great extent liability of loss and damage to freight.

"An industry should load direct to destination station freight in quantities as follows:

10,000 lb. or more for one destination within a radius of 150 miles;

15,000 lb. or more for one destination within a radius of 250 miles;

20,000 lb. or more for any destination.

"Heavy or bulky shipments should be loaded in such a manner that rehandling at transfer station is not required."

Economic Speeds for Freight Operation

By H. Ashton

CONSIDERATION of the effects of different train speeds upon locomotive drawbar pull and normal train resistances brings out an interesting problem in the development of an economic speed for slow freight. M. L. Byers in "Economics of Railway Operation," gives a table of percentage changes in engine tractive power and train resistance for different speeds. From the relation of these two factors to each other he deduces the allowable weight of train for each speed. The relations are developed on a percentage basis with the values of the various factors at a speed of 15 miles an hour assumed as 100 per cent. H. S. Haines in "Efficient Railway Operation" (Appendix VII) gives a similar compilation on this subject. The percentage changes in effective drawbar pull for various speeds, however, are copied from Byers; and in computing the corresponding train loads no account is taken of variations in train resistances. Prof. C. E. Crandall considers the variations in train resistance as negligible also between the speeds of 15 and 30 miles an hour. This, of course, increases the economic speed as the allowable weight of train would vary directly with the locomotive drawbar pull.

If the problem is extended to the consideration of the most economical method of hauling a given amount of freight between two given terminals (leaving out of consideration the cost of fuel) the controlling factors are time and tonnage; in other words, at what average speed will the greatest number of tons be hauled in a given time, or what speed will give the greatest number of ton-miles an hour?

Using Byers' figures referred to above for a Consolidation locomotive weighing 113,000 lb. on the drivers, with 20 in.

by 28 in. cylinders, 50 in. drivers, and 150 lb. boiler pressure, the greatest number of ton-miles an hour was produced at a speed of approximately 12½ miles an hour. The writer made a similar tabulation of effective drawbar pulls for varying speeds from actual tests for three superheater locomotives of the following dimensions:

	Type A	Type B	Type C
Weight on drivers...	175,700 lb.	223,300 lb.	240,200 lb.
Cylinders	23 in. by 28 in.	25 in. by 28 in.	27 in. by 30 in.
Drivers, diameter....	56 in.	62 in.	62 in.
Boiler pressure.....	200 lb.	200 lb.	200 lb.

Types A and B were Consolidation locomotives, and type C a Mikado. Using the same variations in train resistance as Byers, which are based on a 40-ton car with a resistance of 3.2 lb. per ton at a speed of 15 miles an hour (assumed as 100 per cent), calculations were made to determine the allowable weight of train; the curves in Fig. 1 were plotted to show the percentage of ton-miles moved an hour for train velocities ranging from 5 miles an hour to 30 miles an hour. Each of these locomotives attained a maximum efficiency at a speed of approximately 17 miles an hour.

Assuming a unit cost (per train-hour on the road), including locomotive expenses and wages for a full crew, the relative costs per ton-mile was plotted for each type of locomotive. The curves in Fig. 2 show a very sharp reduction in the cost per ton-mile as the speed is increased from 5 miles an hour to 9 or 10 miles an hour, after which the curve flattens as it approaches the minimum point. On the ascending side of the curve, as the speed is increased beyond 17 miles an hour, the increase in the operating cost is much more

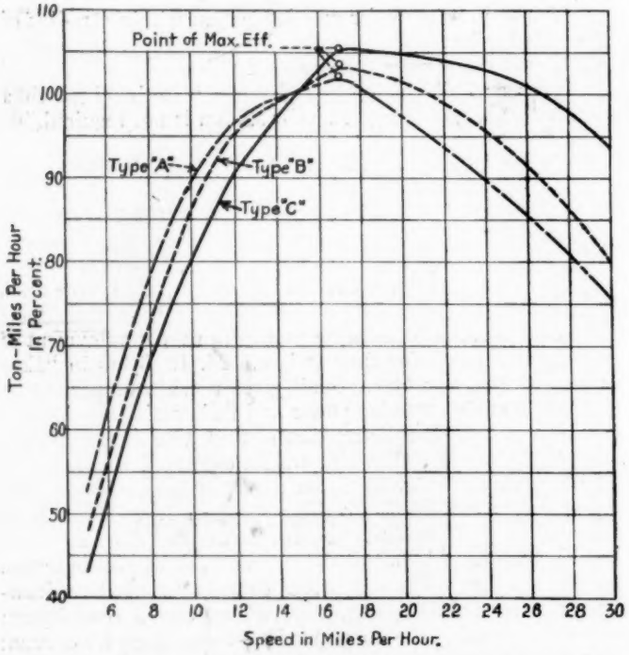


Fig. 1. Relative Ton-Miles Per Hour at Different Speeds

gradual for all three types of locomotive, and particularly so for the heavy Mikado.

As stated above, the variations in train resistance as taken from Byers are on a 40-ton car basis. As the size of equipment is increased the variations would become less pronounced, the normal resistance being greater at the start and increasing less rapidly as the train speed is increased. This would result in a higher economic speed.

The accompanying tabulation, giving the data for the Mikado locomotive, type C, shows how the information was prepared for the plotting of the curves. Similar tables were also made up for the two Consolidation locomotives.

TABULATION FOR MIKADO, TYPE C

Speed	Tractive Effort, Per cent	Train Resistance, Per cent	Allowable Wt. of Train, Per cent	Allowable Wt. of Train, Tons	Ton-Miles per Hour	Cost per Ton-mile, Mills
5	116.9	90.0	129.9	9,093	45,465	.0319
6	116.7	90.0	129.8	9,086	54.516	.0266
7	116.4	90.5	128.6	9,002	63,014	.0230
8	115.7	91.0	127.1	8,897	71,176	.0200
9	114.2	92.0	124.1	8,687	78,183	.0185
10	112.1	93.0	120.5	8,435	84,350	.0172
11	109.9	94.0	116.9	8,183	90,013	.0161
12	107.4	95.0	113.1	7,917	95,004	.0153
13	104.9	97.0	108.1	7,567	98,371	.0148
14	102.5	99.0	103.5	7,245	101,430	.0142
15	100.0	100.0	100.0	7,000	105,000	.0138
16	97.4	101.0	96.4	6,748	107,968	.0134
17	94.8	102.0	92.9	6,503	110,551	.0131
18	92.1	105.0	87.7	6,139	110,502	.0131
20	86.4	110.0	78.5	5,495	109,900	.0132
25	73.5	120.0	61.3	4,291	107,275	.0135
29	64.3	130.0	49.5	3,465	100,485	.0145

Notes: Col. 4 equals Col. 2 divided by Col. 3.
Col. 6 equals Col. 1 multiplied by Col. 5.
Col. 7 is based on an assumed cost of $14.50 per train-hour.

The controlling factors in the development of an economic speed are not, however, merely a matter of variation in effective drawbar pull and train resistance, but also of the physical characteristics to be encountered in any given case, and the density and kind of traffic. In many instances, however, the train performance is permitted to fall below 10 miles an hour, either through attempts to crowd the engine ratings, congestion, or other causes.

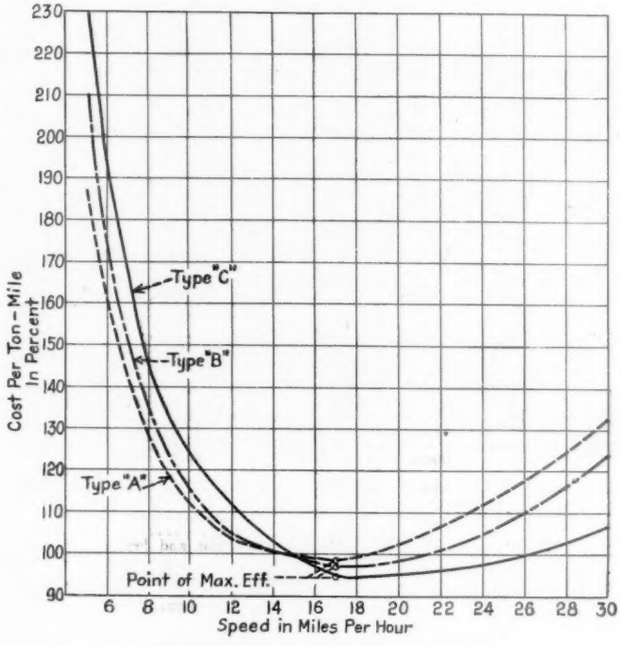


Fig. 2. Relative Operating Costs at Different Speeds

It is quite plainly evident from the curves that operating costs mount very rapidly as the speed of trains is reduced below this figure, and the necessity of keeping the motive power in first class condition is plain if economy is to be attained.

A GREAT NORTHERN mail train plunged through a bridge, which had been weakened by floods, near Index, Wash., on December 11, killing two men—fireman and mail clerk—and injuring several others.

THE PANAMA RAILROAD employed 1,898 persons in October, 1921, as compared with 2,077 in September, 1921, and 3,564 in October, 1920. Of the 1,898 employees in October this year, 301 were paid in gold and 1,597 in silver.

Railroad Administration Accounts

WASHINGTON, D. C.

A TOTAL of $344,379,238 definitive or permanent obligations of carriers was held by the Railroad Administration on December 1, according to the report of the director general to the Senate, which was abstracted in last week's issue. This included $26,389,900 of bonds, $102,475,038 of notes (secured by $138,998,000 of collateral), $1,400,000 of receivers' certificates and $214,114,300 of equipment trust obligations. In addition, $95,848,124 of temporary obligations of carriers and securities deposited by carriers was held. These were taken while the government was in control of the railroads and when the accounts between the administration and the carriers could not be determined, these obligations being taken to insure the government against any possible loss by overpayment. They will be disposed of in final settlement and therefore are not to be considered as fixed assets of the Railroad Administration. The notes included are secured by $182,012,120 of collateral.

One of the exhibits gave the following statement of the receipts and disbursements of the Railroad Administration, not including those of the individual railroads, as shown in the following:

Statement of receipts and disbursements Jan. 1, 1918, to Nov. 30, 1921

Appropriations by Congress:		
Sixty-fifth Congress, S. 3752, Federal control act, approved March 21, 1918	$500,000,000	
Sixty-sixth Congress—		
H. R. 5312, deficiency appropriation act, approved June 30, 1919	750,000,000	
H. R. 10453, transportation act, 1920 (sec. 202), approved March 28, 1920[1]	200,000,000	
H. R. 13677, deficiency appropriation act, approved May 8, 1920	300,000,000	
		$1,750,000,000
Loans repaid by carrier corporation, securities sold, and interest collections		315,931,019
Indebtedness of non-federally controlled railroads		1,147,520
Funds transferred from federal managers and carrier corporations as trustees for the director general		800,738,859
Loan from War Finance Corporation		50,000,000
Transportation collected:		
War Department	$221,705,986	
Navy Department	11,359,796	
Post Office Department	65,575,832	
		298,641,614
American Railway Express Co.		184,392,117
Adams Express Co.		2,800,000
American Express Co.		3,000,000
Wells, Fargo & Co.		1,759,000
Cash payments by carrier corporations for additions and betterments		14,462,522
Cash payments by carrier corporations for allocated equipment		8,216,071
Interest on bank balances		2,381,973
Liberty loan bonds transferred to War Finance Corporation		37,592,254
Miscellaneous		7,809,571
		$3,478,872,520
Payments to carrier corporations and receivers:		
Loans, including funding	$285,122,347	
Advances on compensation	1,482,679,809	
Open accounts and miscellaneous	141,749,210	
Final settlements with carriers under federal control	[2]130,908,412	
Final settlements with other carriers	1,170,845	
		2,041,630,623
Funds transferred to federal managers and to carrier corporations as trustees for the director general, for payment of his obligations		802,714,797
Acquisition of equipment		381,834,524
Inland waterways		18,511,140
Repayment of loan from War Finance Corporation and interest thereon		50,929,452
Interline balances, Canadian railroads		2,139,388
Car hire, bureau		2,405,000
Administration pay rolls		15,816,516
Rents, traveling expenses, stationery, supplies and miscellaneous		10,510,200
Balances:		
In Treasury and banks to credit of director general	$43,664,022	
Unexpended balance of appropriations	108,716,858	
		152,380,880
Grand total		$3,478,872,520

[1] Does not include the disbursements in settlement of the judgments, decrees and awards for which provision was made in sections 206 (e) and 210 (e) of the transportation act, 1920 (H. R. 10453). Such disbursements, to Nov. 30, 1921, aggregated $5,746,859.23.

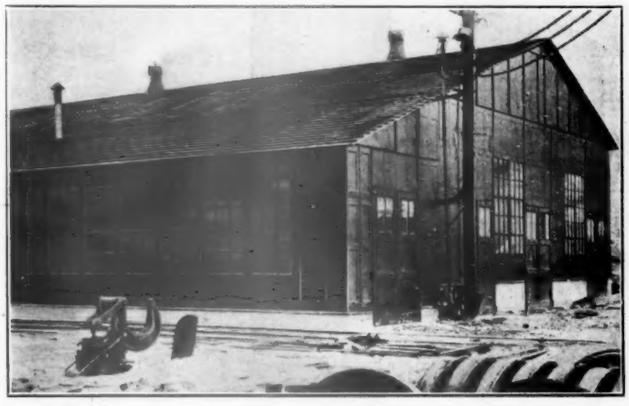
[2] Does not include final settlements agreed upon but not yet paid, amounting to $1,313,428.09. Total settlements agreed upon to Nov. 30, 1921, $132,221,839.89.

The estimated amounts due to carriers in final settlement as of December 1 were stated as follows:

Unpaid compensation	$271,070,577
Cash taken over from the working capital of the carriers at the commencement of federal control	183,903,782
Depreciation	185,803,888
Equipment retirements	35,188,168
Materials and supplies	19,228,041
Net liability on account of maintenance and miscellaneous claims	55,476,132
Gross amount due	750,670,588
Less additions and betterments to be adjusted in final settlements	507,628,508
Balance due to carriers	$243,042,080

New Wall Unit Simplifies Standardized Buildings

THE TRUSCON STEEL COMPANY recently incorporated a new development in its line of standardized buildings that permits of greater flexibility in the application of this type of structure to various uses. The change also permits of a considerable reduction in the number of stock parts



A Shop Building for the Santa Fe at Chicago

required, thereby accomplishing a saving which naturally accrues to the advantage of the user. These buildings are of the steel frame, sheet-steel-sheathed, ready-to-erect type with unit wall sections which frame into structural steel mul-

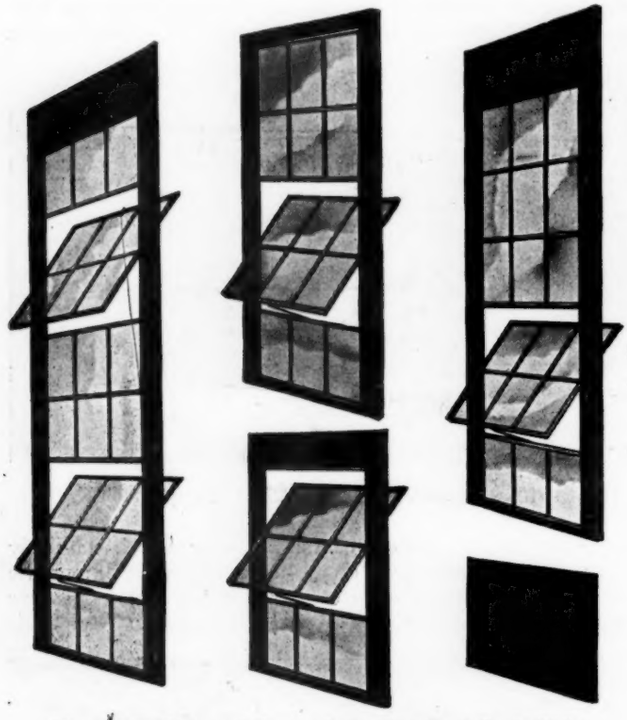
Express Building and Platform Sheds for the Chicago & North Western at Chicago

lions of a special section rolled especially for this purpose. The roof is also of a special unit steel construction with a unique form of assembly that assures a thoroughly watertight cover.

The new feature which has been incorporated in this form

of construction is the adoption of a wall unit 4 ft. wide by 2 ft. 8 in. high with provision that all special units shall be multiples of this height. The number of special units, however, is limited to five sash units which are one, two, three, four and five times the height of the standard wall unit respectively. These five sash units are sufficient to provide almost any arrangement of windows that could be desired. There are no special wall units since solid wall areas are made up entirely by using enough 2-ft. 8-in. units to make up the desired height of wall.

One object of this change in the wall unit standard has been to permit a greater flexibility in the height of the walls, thereby making this form of construction definitely applicable to car repair sheds which require greater side wall heights than has been necessary for most buildings previously built according to this form of construction. The height of 2 ft. 8 in. has been adopted because it is exactly two-thirds of the



The Wall Unit and Four of the Standard Sash Units

standard width of 4 ft. and because all gable or inclined roof truss buildings are designed with a one-third pitch roof. Thus a single incline or gable wall unit is all that is required in conjunction with the standard unit to fill in the end wall under the roof. This applies also to saw-tooth roofs and to the roofs of monitors.

Another new feature of the standard building is the use of 18-gage copper-bearing steel in the side wall units, thereby adding appreciably to the corrosion resistance of these structures. The roof trusses of the smaller buildings are of pressed steel while buildings of over 40-ft. span have structural steel trusses. The sash units in these buildings are of the regular Truscon standard.

While buildings of this type are designed for maximum convenience or speed of erection and facility for knocking down and reconstructing on another site, the manufacturer takes the position that they should not be considered simply as portable buildings. The manner of assembly is such that they form a thoroughly stable and permanent form of construction adaptable to the usual industrial requirements. The photographs illustrate examples of railway installations of the Truscon buildings of the older type. A contract for one of the new type structures for use as a shop building was recently awarded by the Sewell Valley Railway.

Recent Improvements in Adjustable Crosshead

EXTENDED use on several classes of large freight and passenger locomotives has demonstrated the value of the adjustable crosshead, made by the Rogatchoff Company, Baltimore, Md., and described on page 1619 of the June 9, 1920, *Railway Age*. Since the publication of that article the crosshead has been altered in two respects.

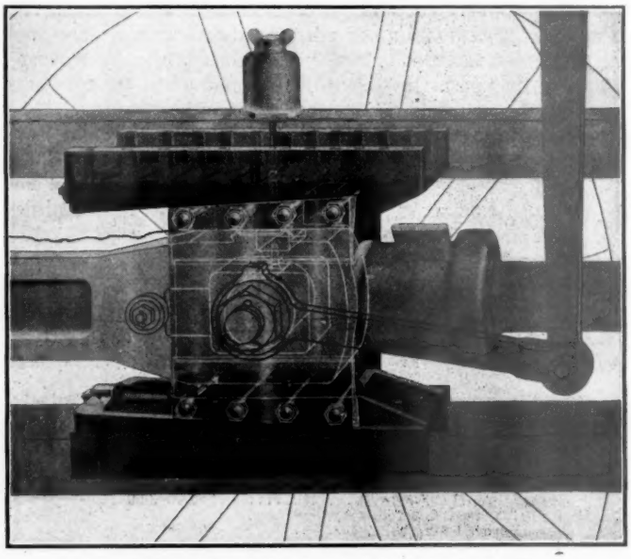


Fig. 1. General View of Rogatchoff Adjustable Crosshead

Reference to the original description of the Rogatchoff crosshead shows that only one adjustable taper wedge was used, this being provided on the bottom shoe. To increase the possible range of adjustment and compensate for a greater wear of both guide and crosshead shoe, a second case-hard-

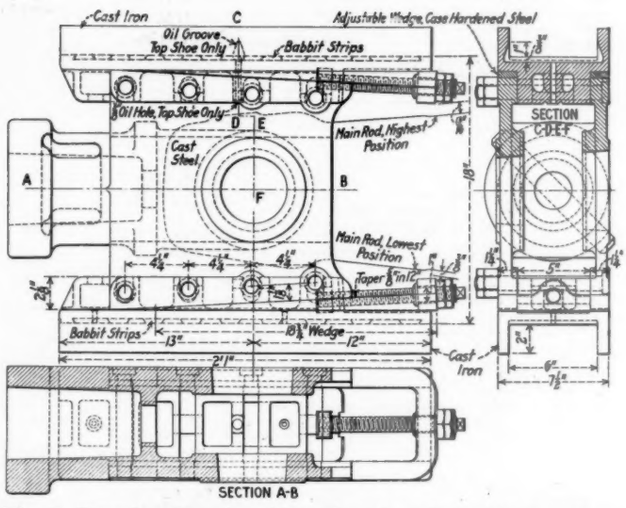


Fig. 2. Drawing Showing Alterations in Adjustable Crosshead

ened wedge has been applied to the upper crosshead shoe as shown in Fig. 1. An adjustment of approximately 7/16 in. can be obtained by these two taper wedges.

Reference to the end view in Fig. 2 shows that the part of the shoe extending between the crosshead sides has been machined with straight parallel sides, whereas the original shoe was provided with taper sides at this point. The elimination of the taper is a considerable advantage in reducing the machining cost and in the greater ease in applying the shoes.

General News Department

One man was killed, another severely injured and a score of other persons slightly hurt, when an Illinois Central suburban coach was derailed because of the failure of a drawbar and then was struck in the side by another surburban train, at Chicago on December 14.

Daring Hold-Up of B. & O. Train at Chicago

A lone bandit swung over the rear railing of the observation car of Baltimore & Ohio train No. 6 for Washington, as it left 63rd street station, Chicago, on the night of December 20. A dozen persons in the observation car were held up and the loot amounted to approximately $1,000. The bandit pulled the bell cord and when the conductor appeared dropped from train, and escaped.

Philadelphia Meeting Place of Next Foreign Trade Convention

The Ninth Annual Foreign Trade Convention of the National Foreign Trade Council will be held in Philadelphia on May 10, 11 and 12, 1922. In making this announcement, O. K. Davis, secretary of the Council, called attention to the fact that, despite the great decline in our foreign trade, nevertheless our exports during the last six months have been 63 per cent more in value and 15 per cent more in quantity than during the similar period of 1913.

Freight Claim Payments Reduced in August

The freight claim division of the American Railway Association has recently issued a summarized statement classifying by the principal causes and commodities the expenditures made by member railroads for freight loss and damage for August, 1921. The statement shows a decrease of $280,737, from the $8,004,007 total loss and damage account of the previous month. Rough handling (coupled with unlocated damage), robbery (coupled with loss of entire packages and unlocated loss), delay and defective equipment represent 82 per cent of the total payments.

Pennsylvania to Safeguard Mails

The Pennsylvania Railroad, to better co-operate with the Post Office Department in the prevention of mail depredations, has issued instructions through the vice-presidents in charge of each of the four operating regions of the Pennsylvania System looking to renewed safeguards for the protection of the mails while in the custody of railroad employees. These employees, when not in uniform, must identify themselves at the mail car door before entering. Railroad employees, especially at larger points, while engaged in handling mail will be required to wear the established cap, badge or other means of identification, so that supervisory officers and mail guards can readily determine whether authorized employees only are handling the mails.

Middle Tennessee to Resume Operation

The Middle Tennessee Railroad, on which no trains have been run for several months, is to be put in operation within a few weeks, according to news items in local papers. The line extends from Mt. Pleasant, Tenn., on the Louisville & Nashville, northward 41 miles to Franklin. At Franklin connection is to be made with the Nashville Interurban, for Nashville, 19 miles farther north. It is proposed to run a combination gasoline car two round trips daily between Mt. Pleasant and Franklin, carrying both freight and passengers. There will be no agents or ticket sellers at the way stations. Freight will be carried, within the limits of the capacity of the car, or train, but the charges must be prepaid.

Delegates to the International Railway Congress

To attend the sessions of the International Railway Congress at Rome, Italy, next April, the Interstate Commerce Commission has appointed C. C. McChord (chairman of the commission), and Winthrop M. Daniels; and the American Railway Association has chosen the following: Daniel Willard, chairman of the board of directors (president of the Baltimore & Ohio); R. H. Aishton, president of the association; W. G. Besler, first vice president (president of the Central of New Jersey), and J. E. Fairbanks, general secretary of the association.

Individual railroad companies, members of the International Association, are expected soon to announce names of delegates appointed by them.

Coroner's Jury Holds Conductor and Engineman for Bryn Athyn Collision

The coroner's jury, meeting at Norristown, Pa., on December 20, in the case of the Philadelphia & Reading collision at Bryn Athyn, Pa., on December 5 (*Railway Age*, December 10, page 1163), returned a verdict of criminal negligence against the conductor and engineman of No. 151, the northbound train involved. These two men have been apprehended and released on $5,000 bail. The engineman is still in the hospital suffering from injuries sustained in the collision. The conductor attended the inquest, although he did not testify. The cause of the collision was the failure of No. 151 to obey a meet order and to heed a manual block signal set at stop.

St. Paul Makes Drastic Cut in Pay Roll

In order to keep within its allotment, all employees of the Chicago, Milwaukee & St. Paul, other than those engaged in actual operation, were placed on half time for the last two weeks of the present year. Officers of the road are not excepted in the economy order and, from the president down, will sacrifice one week's salary. In some of the departments the employees are working half time, while in other departments the plan is to work a week and then lay off a week. It is expected that the forces will be put back on a full time basis the first of the year but the order will not be revoked until business makes the full force necessary. Other cuts in forces or working hours have been made by the Louisville & Nashville, which has placed its shopmen on a five-day week basis, the Mobile & Ohio, the Southern, the Nashville, Chattanooga & St. Louis and the Baltimore & Ohio.

Air Brake Association to Hold Convention in Washington

At a meeting of the Executive Committee of the Air Brake Association held at the Hotel Sherman, Chicago, on December 13, it was unanimously voted to hold the regular annual convention of the association at Washington, D. C., May 9, 10, 11 and 12, 1922. Overflow accommodations will be provided in the new Ebbitt Hotel in the adjacent block. All sessions will be held in the convention hall on the top floor of the Hotel Washington and all exhibits will be erected on the mezzanine floor of that hotel.

The officers of the association hope for a large attendance at the convention because of the necessity for educational work on matters pertaining to the air brake at this time. Many new men have been taken into railroad service during the war years and since who need air brake instruction and numerous air brake devices have been developed which remain to be explained to the older men and to those more recently employed.

Operating Statistics of Large Steam Roads—Selected Items for the Month of October, 1921,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany....1921	394	248,213	270,090	33,718	5,001	70.3	251,120	102,469	115	29	19.9	....
1920	391	329,482	349,804	35,375	5,609	66.0	316,772	142,032	128	29	18.5	....
Boston & Maine....1921	2,469	593,320	665,637	59,011	13,871	74.0	686,186	291,106	342	117	25.4	48
1920	2,469	774,121	865,663	82,698	15,514	66.6	889,193	392,776	366	103	22.0	1
N. Y., N. H. & H....1921	1,960	451,309	493,433	31,729	12,104	71.1	603,566	261,582	300	88	22.7	41
1920	1,959	600,622	624,140	48,744	13,137	72.7	694,197	329,416	356	94	20.9	....
Great Lakes Region:												
Delaware & Hudson....1921	880	362,917	483,942	37,270	9,971	66.3	633,178	323,469	277	37	11.9	115
1920	881	442,687	635,317	40,426	11,281	64.5	771,944	404,633	271	44	14.1	24
Del., Lack. & Western...1921	995	583,323	723,502	133,266	17,772	68.4	979,579	454,304	301	55	15.5	33
1920	997	622,410	756,035	142,032	18,546	65.5	1,104,374	532,892	311	71	18.7	....
Erie (Inc. Chic. & Erie).1921	2,259	1,194,502	1,332,813	56,565	40,610	66.4	2,415,566	1,076,502	561	179	24.2	16
1920	2,259	1,250,830	1,402,606	42,634	40,012	65.5	2,454,681	1,149,398	577	109	15.9	4
Lehigh Valley 1921	1,430	654,605	721,706	71,576	18,774	64.2	1,152,523	549,185	428	115	21.2	99
1920	1,429	696,647	778,401	69,374	20,142	66.4	1,282,246	661,048	383	192	33.4	69
Michigan Central....1921	1,829	486,045	497,301	21,976	15,995	72.0	804,750	335,101	328	84	20.4	92
1920	1,826	573,679	603,074	17,122	18,097	68.5	978,713	433,657	328	82	20.0	24
New York Central....1921	5,655	1,872,858	2,085,274	156,696	70,201	68.7	3,859,899	1,722,943	1,037	593	36.4	216
1920	5,646	2,210,185	2,523,000	193,801	79,178	64.5	4,793,559	2,284,570	(1)	(1)	(1)	(1)
N. Y., Chic. & St. L....1921	572	348,931	349,668	765	11,159	71.1	557,224	224,257	115	40	25.7	43
1920	573	369,345	372,195	974	11,008	69.3	580,082	254,685	111	54	32.7	25
Pere Marquette 1921	2,196	378,377	389,805	7,872	9,828	73.4	521,250	240,797	164	47	22.2	7
1920	2,208	392,596	406,427	6,079	9,790	74.7	516,436	253,346	160	36	18.3	....
Pitts. & Lake Erie....1921	228	93,428	97,353	585	3,249	63.0	234,918	132,693	57	28	33.3	7
1920	225	173,116	178,124	3,114	6,819	68.3	476,010	286,075	66	10	13.3	....
Wabash 1921	2,418	633,635	662,598	8,552	18,394	75.2	948,597	434,627	279	64	18.6	31
1920	2,418	652,973	669,655	7,809	18,444	75.2	985,440	473,520	263	71	21.2	2
Ohio-Indiana-Allegheny Region:												
Baltimore & Ohio....1921	5,185	1,842,781	1,996,076	152,975	48,440	65.0	3,055,823	1,533,669	1,030	362	26.0	174
1920	5,154	2,183,948	2,445,366	123,118	57,280	65.1	3,894,100	2,086,816	1,139	187	14.1	....
Central of N. J....1921	679	295,995	334,412	44,940	6,744	60.9	444,701	219,326	209	51	19.5	11
1920	679	353,389	382,452	37,875	7,487	63.5	488,990	257,452	221	46	17.3	....
Chicago & Eastern Ill....1921	1,131	274,317	276,709	4,016	6,887	62.4	430,569	218,126	128	47	26.9	37
1920	1,131	339,351	352,457	4,700	8,042	63.0	521,855	273,845	141	48	25.6	....
C., C., C. & St. L....1921	2,387	679,476	710,665	2,905	20,474	64.9	1,220,648	577,571	331	120	26.7	42
1920	2,394	726,927	754,009	171	21,068	62.5	1,328,464	621,612	302	81	21.2	....
Elgin, Joliet & Eastern..1921	837	103,892	114,557	6,998	3,278	66.5	242,803	130,266	99	9	8.5	36
1920	836	163,761	186,448	13,575	5,127	69.7	375,653	199,961	93	13	12.4	....
Long Island....1921	395	48,890	54,832	9,544	625	60.6	35,433	13,830	37	9	20.2	1
1920	395	47,604	58,440	13,097	640	63.2	33,266	13,748	40	7	14.1	....
Pennsylvania System....1921	10,875	4,603,675	5,061,474	380,708	124,151	65.1	8,397,115	4,270,575	2,561	932	26.7	495
1920	10,838	5,326,560	5,933,842	461,064	141,530	65.3	9,456,714	5,104,129	2,268	804	26.2	25
Phila. & Reading....1921	1,119	577,160	654,573	83,027	15,096	64.5	1,010,602	439,633	361	78	17.7	144
1920	1,119	733,513	860,367	119,520	18,498	65.6	1,265,734	716,536	274	96	26.0	....
Pocahontas Region:												
Chesapeake & Ohio....1921	2,548	759,300	829,763	24,065	23,127	58.8	1,757,408	958,638	468	90	16.1	88
1920	2,520	911,670	1,005,201	29,740	27,191	59.3	2,104,952	1,162,574	402	127	23.9	....
Norfolk & Western....1921	2,222	796,648	979,489	36,351	22,911	61.0	1,704,232	936,383	602	106	15.0	178
1920	2,189	948,720	1,214,534	40,186	26,023	62.6	2,023,321	1,129,796	505	166	24.8	53
Southern Region:												
Atlantic Coast Line....1921	4,899	564,675	569,960	8,647	12,873	66.0	652,649	256,434	289	126	30.4	62
1920	4,887	603,136	605,854	9,894	13,189	68.8	685,679	294,180	299	135	31.1	....
Central of Georgia....1921	1,908	223,985	224,804	3,859	5,146	74.5	249,495	112,463	117	23	16.3	8
1920	1,913	261,747	263,013	4,389	5,018	68.9	276,883	131,296	106	16	12.8	....
I. C. (Inc. Y. & M. V.)..1921	6,151	1,813,792	1,820,960	38,383	51,042	64.6	3,146,105	1,442,999	728	88	10.7	16
1920	6,151	2,068,757	2,076,482	40,867	51,128	62.5	3,387,160	1,603,148	715	88	10.9	11
Louisville & Nashville....1921	5,020	1,662,242	1,782,965	57,983	29,659	62.5	1,896,413	916,114	581	83	12.5	12
1920	5,024	1,631,520	1,752,648	60,871	27,857	63.4	1,769,946	870,561	538	120	18.3	....
Seaboard Air Line....1921	3,537	431,801	442,084	8,305	9,507	74.0	465,459	195,408	167	89	34.7	....
1920	3,537	433,780	441,091	10,208	9,577	72.2	497,335	225,838	175	91	34.2	....
Southern Ry. 1921	6,942	1,372,170	1,401,764	36,125	31,083	70.4	1,585,680	672,590	884	234	20.9	36
1920	6,942	1,528,664	1,566,721	45,265	31,914	69.2	1,744,853	790,939	899	204	18.5	2
Northwestern Region:												
C. & N. W....1921	8,378	1,788,642	1,858,385	29,285	39,161	63.0	2,266,132	985,420	786	282	26.4	9
1920	8,323	1,979,432	2,023,537	26,567	43,605	65.8	2,542,746	1,071,057	708	232	24.7	....
C. M. & St. P.....1921	10,992	1,758,207	1,812,212	69,115	44,795	65.0	2,501,508	1,127,810	864	218	20.2	111
1920	10,609	1,887,869	1,942,232	80,023	47,034	66.3	2,641,150	1,232,433	695	287	29.3	1
C., St. P., M. & O....1921	1,726	356,383	374,830	16,028	7,408	72.6	380,561	167,774	152	61	28.7	14
1920	1,726	361,287	376,210	16,674	7,316	74.7	384,907	178,614	159	50	24.1	14
Great Northern....1921	8,162	1,287,869	1,324,973	43,484	37,181	63.1	2,218,184	960,561	633	153	19.5	121
1920	8,172	1,241,107	1,285,454	51,743	35,326	65.0	2,098,631	1,025,196	540	189	25.9	24
M., St. P. & S. Ste. M..1921	4,359	579,037	615,536	9,018	14,251	74.9	708,614	340,026	349	56	13.9	6
1920	4,227	658,463	665,145	9,272	15,171	68.9	787,395	373,912	335	78	18.9	19
Northern Pacific....1921	6,420	1,096,526	1,144,694	68,232	31,900	69.1	1,802,429	812,038	583	144	19.8	65
1920	6,405	1,097,990	1,154,176	74,301	30,199	71.8	1,699,889	841,141	534	132	19.8	6
Ore.-Wash. R. R. & Nav..1921	2,150	268,684	301,929	43,200	6,405	67.5	378,356	173,962	137	30	18.0	....
1920	2,146	249,460	276,294	32,659	5,898	73.4	327,895	164,458	121	42	25.6	....
Central Western Region:												
Atch., Top. & Santa Fe..1921	9,763	2,022,714	2,167,743	104,497	57,286	65.0	3,235,278	1,154,739	773	212	21.5	55
1920	9,708	1,957,235	2,079,980	106,915	52,018	65.4	2,921,471	1,159,224	699	248	26.2	10
Chicago & Alton....1921	1,010	390,775	399,228	5,274	8,578	63.0	519,787	214,194	109	36	24.7	8
1920	1,010	381,597	390,911	7,272	8,089	65.3	496,311	226,202	109	47	30.2	2
Chic., Burl. & Quincy....1921	9,326	1,855,435	1,950,899	102,450	50,623	64.1	3,019,783	1,422,780	683	255	27.2	33
1920	9,304	2,020,772	2,111,219	106,987	53,066	60.8	3,308,836	1,565,410	690	234	25.3	....
Chic., Rock Isl. & Pacific.1921	7,661	1,482,515	1,507,431	13,930	33,705	71.2	1,791,562	819,175	591	165	21.8	14
1920	7,663	1,534,671	1,564,283	18,835	30,335	67.6	1,695,533	775,612	494	193	28.1	6
Denver & Rio Grande..1921	2,593	353,356	447,277	92,546	7,678	62.3	450,507	195,472	235	71	23.2	2
Western 1920	2,604	387,470	492,399	101,384	8,186	65.6	473,025	216,177	242	69	22.2	....
Oregon Short Line....1921	2,367	512,290	530,574	37,643	11,979	60.2	759,343	322,085	193	43	18.2	14
1920	2,359	457,958	478,820	33,404	10,103	62.6	620,301	293,385	214	42	16.4	7
Southern Pacific 1921	6,975	1,319,919	1,508,111	266,580	38,153	68.2	2,172,652	913,423	616	182	22.8	11
1920	6,970	1,469,474	1,679,301	272,569	38,513	69.1	2,184,327	977,182	636	141	18.2	1
Union Pacific 1921	3,615	1,733,778	1,755,100	92,124	46,098	63.0	2,700,650	1,048,623	438	108	19.7	2
1920	3,614	1,644,473	1,670,106	65,791	41,918	66.8	2,400,155	1,052,239	430	113	20.8	1
Southwestern Region:												
Gulf, Colo. & Santa Fe..1921	1,895	257,751	265,062	4,436	6,658	65.5	373,373	161,740	123	35	22.2	23
1920	1,895	287,077	292,228	6,541	6,988	69.1	389,298	180,317	106	39	26.9	2
Missouri, Kans. & Tex....1921	1,709	290,637	290,655	6,638	7,910	63.6	441,312	181,738	131	46	26.2	37
1920	1,710	352,245	353,917	8,442	8,326	59.6	498,631	205,781	121	51	29.8	1
Mo., Kans. & Tex. of Tex.1921	1,740	243,393	248,234	3,634	5,183	64.0	286,568	115,438	97	38	28.2	10
1920	1,740	301,938	307,446	4,585	5,944	62.6	348,222	148,346	109	34	24.0	4
Missouri Pacific....1921	7,264	1,256,553	1,268,619	38,575	31,041	68.7	1,748,084	797,150	420	173	29.2	....
1920	1,263	1,261,804	1,271,103	42,157	30,825	71.8	1,731,897	842,745	401	165	29.1	....
St. Louis-San Francisco..1921	4,761	842,571	854,333	13,249	16,273	68.4	895,830	399,818	352	101	22.3	14
1920	4,757	988,735	997,776	18,909	16,581	66.1	959,214	432,649	383	95	19.9	....
Southern Pacific Lines..1921	3,657	575,418	578,770	4,742	11,789	64.7	719,163	314,386	193	103	34.7	6
(in Tex. and Louisiana)[2].1920	3,642	669,965	680,240	5,327	14,284	69.7	828,428	389,350	190	96	33.4	....
Texas & Pacific....1921	1,953	283,360	283,360	2,569	6,651	67.3	353,101	140,400	130	65	33.1	20
1920	1,947	348,363	348,425	6,049	7,429	68.2	408,530	174,025	130	67	33.9	3

[1] Data not available. [2] No passenger-train service.
Compiled by the Bureau of Statistics, Interstate Commerce Commission, subject to revision.

Compared with October, 1920, for Roads with Annual Operating Revenues above $25,000,000

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per car	Net ton miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Passenger service: Train-miles	Passenger train car-miles
New England Region:														
Boston & Albany 1921	3,022	4,751	7,773	7.8	364	1,012	413	20.5	425	29.5	8,391	209	301,951	1,960,439
1920	865	7,234	8,099	5.0	364	961	431	25.3	566	33.8	11,631	211	321,242	2,004,124
Boston & Maine 1921	16,989	16,207	33,196	18.8	739	1,157	491	21.0	283	18.2	3,804	142	803,782	4,403,021
1920	8,244	28,816	37,060	9.5	....	1,149	507	25.3	342	20.3	5,132	....	873,754	4,819,799
N. Y., N. H. & H. 1921	22,805	17,432	40,237	22.9	561	1,337	580	21.6	210	13.6	4,306	161	1,024,394	6,479,665
1920	11,474	35,793	47,267	9.3	....	1,156	548	25.1	225	12.3	5,425	192	1,149,027	7,118,434
Great Lakes Region:														
Delaware & Hudson 1921	9,518	7,084	16,602	10.5	95	1,745	891	32.4	629	29.2	11,852	182	189,965	961,429
1920	5,222	12,729	17,951	7.5	....	1,744	914	35.9	727	31.4	14,822	188	192,697	998,857
Del., Lack. & West. 1921	16,488	9,176	25,664	14.3	....	1,679	779	25.6	571	32.7	14,735	174	497,147	3,597,032
1920	5,965	18,011	23,976	4.9	....	1,774	856	28.7	717	38.1	17,246	....	495,909	3,624,144
Erie (Inc. Chic. & Erie). 1921	34,941	21,065	56,006	19.7	1,222	2,022	901	26.5	620	35.2	15,374	141	681,595	5,009,465
1920	10,887	44,466	55,353	6.4	....	1,962	919	28.7	670	35.6	16,415	152	712,014	5,152,336
Lehigh Valley 1921	28,594	9,649	38,243	16.9	1,135	1,761	839	29.3	463	24.6	12,385	165	356,513	2,685,495
1920	10,807	22,863	33,670	9.3	....	1,841	949	32.8	633	29.1	14,291	169	377,288	2,920,395
Michigan Central 1921	16,882	16,059	32,941	21.7	....	1,656	689	21.0	328	21.8	5,909	129	585,346	5,577,443
1920	4,848	22,489	27,337	7.4	....	1,706	756	24.0	512	31.2	7,663	....	626,896	5,628,420
New York Central 1921	75,332	51,138	126,470	22.4	2,371	2,061	920	24.5	440	26.1	9,828	121	2,338,703	19,498,642
1920	32,912	119,241	152,153	8.3	....	2,169	1,034	28.9	484	26.0	13,052	....	2,458,363	19,557,794
N. Y., Chic. & St. L. 1921	3,117	4,999	8,116	10.6	337	1,597	643	20.1	891	62.4	12,643	107	89,660	536,589
1920	1,664	9,409	11,073	7.5	....	1,571	690	23.1	742	46.3	14,345	....	87,835	561,869
Pere Marquette 1921	10,267	12,389	22,656	17.4	....	1,378	636	24.5	343	19.1	3,537	137	290,517	1,433,670
1920	4,271	17,767	22,038	7.8	....	1,315	645	25.9	371	19.2	3,701	169	308,686	1,531,606
Pitts. & Lake Erie 1921	18,839	7,964	26,803	41.9	1,635	2,514	1,420	40.8	160	6.2	18,780	92	107,718	563,317
1920	4,316	23,332	27,648	10.9	....	2,750	1,653	42.0	334	11.6	41,095	72	115,722	594,652
Wabash 1921	11,505	12,526	24,031	12.0	538	1,497	686	23.6	583	32.8	5,799	157	526,307	2,807,014
1920	5,436	19,445	24,881	8.2	....	1,509	725	25.7	614	31.8	6,318	163	579,853	3,096,326
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohio 1921	63,559	36,752	100,311	13.1	1,390	1,658	832	31.7	493	24.0	9,542	184	1,419,843	9,165,392
1920	28,886	80,650	109,536	6.9	....	1,783	956	36.4	615	25.9	13,062	....	1,392,847	8,844,369
Central of N. J. 1921	17,671	8,788	26,459	15.0	4,253	1,502	741	32.5	267	13.5	10,427	171	336,196	1,625,322
1920	7,481	17,461	24,942	14.7	....	1,382	727	34.4	333	15.2	12,236	....	339,187	1,411,229
Chicago & Eastern Ill. 1921	11,972	3,612	15,584	16.6	78	1,570	795	31.7	452	22.9	6,221	158	223,481	1,477,383
1920	5,038	8,382	13,420	15.6	....	1,538	807	34.1	658	30.7	7,811	....	239,824	1,534,783
C., C., C. & St. L. 1921	14,883	18,677	33,560	11.9	376	1,796	850	28.2	555	30.3	7,807	131	715,350	4,363,218
1920	5,807	28,767	34,574	7.2	....	1,828	855	29.5	580	31.4	8,376	....	767,348	4,803,698
Elgin, Joliet & Eastern. 1921	10,311	3,546	13,857	8.8	362	2,337	1,254	39.7	303	11.5	5,022	130	(2)	(2)
1920	8,780	6,794	15,574	7.1	....	2,294	1,221	39.0	414	15.2	7,712	....	(2)	(2)
Long Island 1921	1,971	3,929	5,900	5.1	169	725	283	22.1	76	5.6	1,131	304	202,762	1,136,605
1920	528	4,631	6,159	3.4	....	699	289	21.5	72	5.1	1,124	....	208,195	1,189,581
Pennsylvania System. 1921	205,908	79,358	285,266	15.4	23,411	1,824	928	34.4	483	21.6	12,667	141	5,079,674	34,510,292
1920	114,952	185,961	300,913	3.3	....	1,775	958	36.1	547	23.2	15,192	....	5,380,687	36,610,519
Phil. & Reading 1921	23,583	13,352	36,935	5.2	2,668	1,751	762	29.1	384	20.4	12,668	169	492,855	2,337,671
1920	8,272	31,734	40,006	4.8	....	1,726	977	38.7	578	22.7	20,652	....	527,373	2,463,532
Pocahontas Region:														
Chesapeake & Ohio 1921	36,264	13,185	49,449	11.0	....	2,315	1,263	41.5	625	25.7	12,136	131	445,453	2,508,873
1920	16,466	26,779	43,245	10.4	....	2,309	1,275	42.8	867	34.2	14,882	....	448,884	2,588,405
Norfolk & Western 1921	29,955	6,807	36,762	9.0	611	2,139	1,175	40.9	822	32.9	13,594	175	412,388	2,663,415
1920	16,690	20,287	36,977	6.0	....	2,133	1,191	43.4	986	36.3	16,651	....	407,528	2,772,059
Southern Region:														
Atlantic Coast Line 1921	20,882	9,369	30,251	19.3	....	1,156	454	19.9	273	20.8	1,688	144	703,575	4,409,348
1920	8,697	16,845	25,542	11.2	....	1,137	488	22.3	372	24.2	1,942	....	758,038	4,942,150
Central of Georgia 1921	3,930	3,714	7,644	14.1	....	1,114	502	21.9	475	29.1	1,901	149	308,462	1,507,993
1920	1,525	6,210	7,735	5.5	....	1,058	502	26.2	548	30.4	2,214	....	300,941	1,518,575
I. C. (Inc. Y. & M. V.). 1921	37,570	25,541	63,111	8.6	1,986	1,735	796	28.3	738	40.4	7,567	140	1,439,176	8,321,393
1920	14,268	44,900	59,168	4.5	....	1,637	775	31.4	874	44.6	8,407	....	1,402,046	8,298,092
Louisville & Nashville. 1921	37,535	16,823	54,358	24.7	87	1,141	551	30.9	544	28.2	5,887	165	935,740	5,463,105
1920	16,099	29,104	45,203	13.4	68	1,085	534	31.3	621	31.3	5,590	....	928,694	5,526,784
Seaboard Air Line 1921	11,610	8,900	20,510	27.6	....	1,078	453	20.6	307	20.2	1,782	191	557,431	3,214,635
1920	4,671	12,529	17,200	10.33	....	1,147	521	23.6	424	24.9	2,059	181	542,157	2,968,913
Southern Ry. 1921	35,848	24,128	59,976	11.6	840	1,156	490	21.6	362	23.8	3,125	204	1,285,878	7,614,812
1920	16,515	43,501	60,016	3.6	....	1,142	517	24.8	425	24.8	3,676	....	1,490,504	9,420,026
Northwestern Region:														
C. & N. W. 1921	43,477	29,550	73,027	7.9	....	1,267	551	25.2	435	27.5	3,794	170	1,631,238	10,020,373
1920	30,602	50,980	81,582	7.6	....	1,285	341	24.6	424	26.2	4,151	....	1,712,587	10,582,975
C. M. & St. P. 1921	46,499	29,411	75,910	16.9	....	1,423	641	25.2	479	29.3	3,310	153	1,520,943	9,475,005
1920	23,068	43,841	66,909	7.2	....	1,399	653	26.2	594	34.2	3,747	....	1,422,420	9,465,605
C., St. P., M. & O. 1921	3,630	12,104	15,734	13.4	212	1,068	471	22.6	344	20.9	3,135	169	303,788	1,759,316
1920	2,857	10,408	13,265	11.0	....	1,065	494	24.4	434	23.8	3,338	....	322,210	1,977,511
Great Northern 1921	42,066	11,185	53,251	10.0	....	1,722	746	25.8	582	35.7	3,796	154	990,069	5,924,615
1920	27,002	22,652	49,654	8.4	....	1,691	826	29.0	666	35.3	4,047	....	1,001,125	6,400,176
M., St. P. & S. Ste. M. 1921	20,453	6,110	26,563	11.0	2,997	1,224	587	23.9	413	23.1	2,517	124	434,308	2,577,928
1920	9,670	12,969	22,639	8.6	....	1,196	568	24.6	533	31.4	2,854	129	432,165	2,565,123
Northern Pacific 1921	33,287	9,730	43,017	14.8	323	1,644	741	25.5	609	34.6	4,080	124	841,446	5,554,885
1920	21,674	16,946	38,620	10.4	....	1,548	766	27.9	703	35.1	4,236	138	864,276	6,111,532
Ore.-Wash. R.R. & Nav. 1921	7,394	4,256	11,650	2.6	243	1,408	647	27.2	482	26.3	2,610	227	255,212	1,728,061
1920	2,754	4,386	7,140	4.4	....	1,314	659	27.9	743	36.3	2,472	....	237,447	1,719,789
Central Western Region:														
Atch., Top. & Santa Fe. 1921	43,814	15,161	58,975	8.8	1,897	1,599	571	20.2	632	48.2	3,815	146	1,658,487	12,797,196
1920	24,109	40,392	64,501	8.7	....	1,493	592	22.3	580	39.8	3,852	154	1,743,241	13,810,841
Chicago & Alton 1921	9,061	6,020	15,081	4.0	....	1,330	548	25.0	458	29.1	6,839	186	293,706	1,669,120
1920	3,291	13,541	16,832	3.5	28	1,301	593	28.0	434	23.7	7,223	207	314,268	1,809,941
Chic., Burl. & Quincy. 1921	44,523	26,795	71,318	10.0	....	1,628	767	28.1	644	35.7	4,921	161	1,524,875	10,057,395
1920	20,051	54,265	74,316	7.8	....	1,637	775	29.5	679	37.9	5,428	166	1,524,097	10,442,845
Chic., Rock Isl. & Pacific. 1921	26,653	21,753	48,406	11.6	531	1,208	553	24.3	546	31.5	3,449	176	1,326,529	7,642,721
1920	11,060	34,870	45,930	8.9	....	1,105	505	25.6	545	31.5	3,265	....	1,294,546	7,853,438
Denver & Rio Grande 1921	11,707	6,010	17,717	10.6	310	1,275	553	25.5	356	22.4	2,431	223	233,056	1,658,165
Western 1920	8,392	8,444	16,836	6.0	....	1,221	558	26.4	414	23.9	2,678	....	229,522	1,678,980
Oregon Short Line 1921	7,758	6,360	14,118	4.1	169	1,482	629	26.9	736	45.5	4,390	141	281,433	2,034,848
1920	4,234	7,039	11,273	4.2	....	1,376	641	29.0	840	46.2	4,012	147	266,166	2,116,774
Southern Pacific 1921	23,954	16,262	40,216	6.9	275	1,646	692	23.9	733	44.7	4,224	147	1,319,204	10,753,877
1920	13,466	34,846	48,312	4.4	....	1,486	665	25.4	652	37.1	4,522	164	1,480,670	11,942,399
Union Pacific 1921	14,178	11,752	25,930	7.8	622	1,588	605	22.7	1,305	91.0	9,358	161	899,606	7,452,422
1920	6,411	17,590	24,001	6.1	....	1,460	640	25.1	1,414	84.3	9,392	169	935,200	7,571,836
Southwestern Region:														
Gulf, Colo. & Santa Fe. 1921	8,305	5,128	13,433	4.2	428	1,449	628	24.3	388	24.4	2,754	137	195,054	1,180,538
1920	2,635	8,866	11,501	5.3	50	1,356	628	25.8	506	28.4	3,070	....	220,996	1,463,563
Missouri, Kans. & Tex. 1921	7,869	6,154	14,023	7.5	....	1,518	625	23.0	418	28.6	3,429	139	273,962	2,068,122
1920	3,931	10,796	14,727	7.7	....	1,416	584	24.7	451	30.6	3,881	....	302,054	2,310,315
Mo., Kan. & Tex. of Tex. 1921	219	12,311	12,530	5.1	....	1,177	474	22.3	297	20.8	2,140	162	275,064	1,776,187
1920	352	13,234	13,586	4.1	....	1,153	491	25.0	352	22.5	2,750	....	297,154	2,099,132
Missouri Pacific 1921	28,797	24,440	53,237	8.2	176	1,391	634	25.7	483	27.4	3,540	158	927,521	5,657,228
1920	12,082	43,841	55,923	5.0	....	1,373	668	27.3	486	24.6	3,743	....	966,705	5,946,427
St. Louis-San Francisco. 1921	18,690	13,402	32,092	6.9	....	1,063	475	24.6	402	23.9	2,709	190	778,370	4,482,149
1920	8,664	27,520	36,184	4.4	....	970	438	26.1	386	22.4	2,934	215	796,067	4,800,713
Southern Pacific Lines (in Tex. and Louisiana)[2]. 1921	8,329	16,926	25,255	16.3	1,020	1,250	546	26.7	402	23.3	2,773	131	538,933	3,506,395
1920	2,573	21,791	24,364	4.4	....	1,237	581	27.3	516	27.1	3,448	143	564,640	3,866,190
Texas & Pacific 1921	5,032	6,890	11,922	20.5	....	1,246	495	21.1	380	26.7	2,319	150	301,314	1,994,243
1920	1,913	12,529	14,442	7.2	....	1,173	500	23.4	389	24.3	2,884	150	339,910	2,361,406

Railway Returns for October

The Interstate Commerce Commission's monthly summary of railway revenues and expenses for October and 10 months of 1921 is as follows:

Item No.	Item	October 1921	October 1920	Ten Months 1921	Ten Months 1920
1	Average number of miles operated	234,960.48	234,666.79	234,833.35	234,269.58
	Revenues:				
2	Freight	$400,709,558	$480,375,264	$3,287,836,029	$3,500,209,916
3	Passenger	[2] 88,844,414	[3] 113,902,023	[4] 982,436,863	[5] 1,065,809,801
4	Mail	7,358,399	8,220,583	78,557,350	133,766,495
5	Express	12,182,364	7,605,951	82,693,231	123,459,503
6	All other transportation	15,833,055	16,975,598	136,656,441	129,320,273
7	Incidental	9,975,097	14,285,179	99,573,801	125,811,889
8	Joint facility—Cr.	592,304	695,566	6,351,460	6,419,120
9	Joint facility—Dr.	199,149	233,056	1,453,811	1,977,310
10	Railway operating revenues	535,296,042	641,827,108	4,672,651,364	5,082,819,687
	Expenses:				
11	Maintenance of way and structures	72,276,148	90,642,115	651,551,597	878,074,290
12	Maintenance of equipment	112,230,543	140,340,662	1,057,398,639	1,304,145,101
13	Traffic	6,896,372	6,794,179	70,412,827	59,443,500
14	Transportation	189,095,352	268,541,043	1,923,833,896	2,371,492,383
15	Miscellaneous operations	3,935,657	5,589,727	41,537,382	51,781,142
16	General	13,255,014	15,193,051	140,508,217	142,530,890
17	Transportation for investment—Cr.	486,030	557,173	4,914,306	4,040,348
18	Railway operating expenses	397,203,056	526,543,604	3,880,328,252	4,803,426,958
19	Net revenue from railway operations	138,092,986	115,283,504	792,323,112	279,392,729
20	Railway tax accruals	25,775,267	22,991,572	235,353,454	229,641,294
21	Uncollectible railway revenues	186,657	57,727	1,087,629	891,127
22	Railway operating income	112,131,062	92,234,205	555,882,029	48,860,308
23	Equipment rents—Dr. balance	5,631,811	3,827,951	45,004,353	27,197,580
24	Joint facility rent—Dr. balance	1,045,891	1,765,231	14,022,153	15,657,766
25	Net railway operating income	105,453,360	86,641,023	496,855,523	6,004,962
26	Ratio of expenses to revenues (per cent)	74.20	82.04	83.04	94.50

[1] Does not include Boston & Albany, the revenues and expenses of which are included in New York Central report.
[2] Includes $2,662,719, sleeping and parlor car surcharge.
[3] Includes $2,338,548, sleeping and parlor car surcharge.
[4] Includes $27,357,169, sleeping and parlor car surcharge.
[5] Includes $5,021,812, sleeping and parlor car surcharge.

Note.—Excludes Detroit, Toledo & Ironton, report not having been filed at date of compilation.

Markham Asks Employes to Repudiate Labor Propagandists

C. H. Markham, president of the Illinois Central, in an open letter, addressed to the employees of that road, asks for a showdown on charges made against the railroads by representatives of railroad employees.

He asks that either the employees back these accusations or repudiate them, and adds that if they know of any irregularities or mismanagement on the Illinois Central it is their duty to bring them to his attention.

The letter contains the names, dates and a resume of charges made by labor representatives such as Frank J. Warne, W. Jett Lauck and Glen E. Plumb. Mr. Markham says: "I cannot believe that these men, calling themselves your spokesmen, reflect the true sentiment of the men of the Illinois Central System, who have worked with the management so faithfully and wholeheartedly in building up a railway system which we pride ourselves in believing is one of the greatest railway systems in the world.

But, frankly, I have been disappointed that these men have been permitted to continue to pour out unchecked torrents of false accusations without even a word of public protest from the men whom they claim to represent and whose money makes their activities possible."

The Southern Pacific's Hospitals

The first hospital building exclusively devoted to the care of railroad employees was built on the Central Pacific in 1867 and this road, now the Southern Pacific, operates through its hospital department today, a general hospital in San Francisco, Cal., and 14 emergency hospitals located in six cities. The work of the department is in a large measure sustained through the collection of hospital dues from officers and employees of the company. Employees receiving $85 a month pay 50 cents monthly; those receiving over $85 and under $125 pay 65 cents monthly and those receiving $125 or over pay 75 cents a month. For these fees the employees are entitled to receive all necessary medical and surgical attention at their residences, at surgeons' offices or at the hospital, together with hospital care, nursing and maintenance, medicine, surgical dressings, artificial limbs and appliances, in fact everything in the way of attention or care that enters into the bill of expense when misfortune in the way of sickness or accident befalls them.

THREE MEN WERE KILLED and one injured by the explosion of the boiler of a freight locomotive on the Atchison, Topeka & Santa Fe at Carrolton, Mo., on December 16.

THE ON-TIME ARRIVAL record of all passenger trains on the Illinois Central for the first 10 months in 1921, averaged 98.6 per cent, as against 95.5 for the 12 months of 1920.

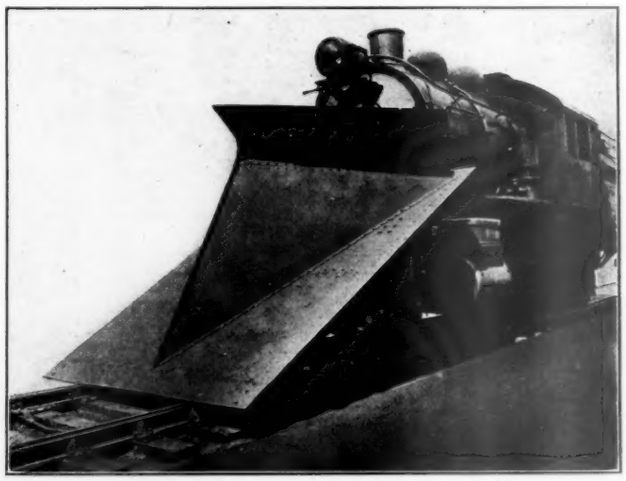
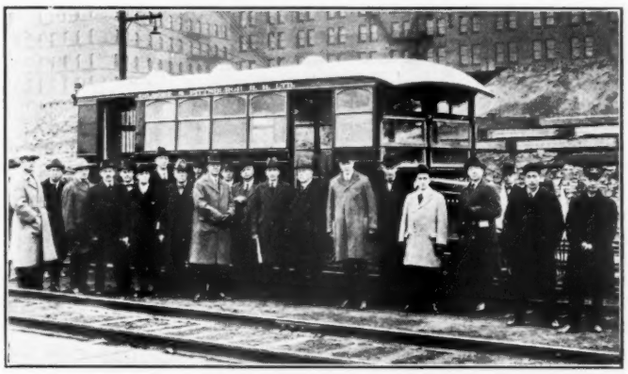


Photo from Kadel & Herbert

Getting Ready for Winter on the Philadelphia & Reading

Gasolene Motor Car of the Northern Pacific

A specially designed gasolene rail car has recently made several trips on the Northern Pacific. This car consists of the International Motor Company's Mack truck chassis mounted on steel flanged wheels so that it can be operated on standard railroad track. The body of the car has accommodations for 17 passengers and a baggage compartment. The trial trips were made between St. Paul and White Bear, a distance of about 12 miles, over a line which includes a steep and winding grade almost two miles long. Twenty-three passengers were carried on the first trip and the car quickly climbed the steep grade. On a second trip a few days later



Group of Railroad Officers at Trial of Gasolene Driven Passenger Car

the distance was covered in 29½ minutes, whereas the schedule time of fast passenger trains between these points is 25 minutes.

The Northern Pacific is now operating the Mack rail car in regular service on a branch line and expects soon to install more equipment of the same kind, as it has been found that the costs are much lower than those for steam operated equipment. It is reported that the Great Northern is also planning to install the gas-propelled rail cars on various branch lines.

New Interchange Rules, Loading Rules and Tank Car Specifications

The reports of the Arbitration Committee and the Committee on Prices for Labor and Materials, as printed in Circulars Nos. D. V. 210 and 205, have been approved by the General Committee of the Mechanical Division and by the board of directors of the American Railway Association, with the exception of recommended changes in Rules 32, 43 and 70. The revised Rules of Interchange, effective January 1, 1922, are now ready for distribution. Particular attention is called to the abrogation of Section D of Interchange Rule 112, which is retroactive to cover all unsettled cases under the 1920 Code of Rules.

The committee has also rendered decisions in Arbitration Cases 1184 and 1214, inclusive, which decisions have been ordered to be printed and issued to the members as Circular No. D. V. 221.

The recommendations contained in the report of the Committee on Loading Rules, issued in Circular No. D. V. 209, have been approved by letter ballot of the members and by the American Railway Association and have been prepared in the form of a supplement to the rules governing the loading of lumber, logs, stone, etc., and loading and carrying structural materials, plates, rails, girders, etc., effective January 1, 1922.

The recommendations contained in the report of the Committee on Tank Cars, issued in Circular No. D. V. 207, have been approved by letter ballot of the members and by the American Railway Association and have been prepared in the form of a supplement to the tank car specifications, effective January 1, 1922.

Traffic News

The Traffic Club of Akron, Ohio, held its first annual banquet on December 12. S. J. Witt, general freight and passenger agent of the Akron, Canton & Youngstown, was the principal speaker.

The Traffic Study Club of Akron, Ohio, held its first annual dinner on Monday evening, December 12 with 50 members and guests present and John Ihnot, president, presiding. S. J. Witt, general freight and passenger agent of the Akron, Canton & Youngstown, spoke on the procedure of handling rate adjustments before various committees of the railroads.

R. C. Fulbright, of Houston, Tex., was the principal speaker at the first annual dinner of the Dallas Traffic Club on December 10. His subject was "Shippers' Interest in Railroad Problems." Other speakers were George T. Atkins; I. S. McConnell, president of the Fort Worth Traffic Club; W. E. Edgar, president of the Waco Traffic Club; and Tom Finty, Jr. Officers were elected as follows: President, Paul Junkin; vice-presidents, A. C. Valentine, Julian Nance and Elbert Blair; secretary-treasurer, H. C. Eargle; board of governors, J. B. Jones, Frank Osborne, Grant S Maxwell, P. A. Richardson, Seth Tate and Don Allen.

At the annual meeting of the Transportation Club of Tulsa, Okla., on December 12, the following officers were elected: President, A. C. Holmes, traffic manager, Empire Refineries, Inc.; first vice-president, A. C. Wilson, city freight agent, St. Louis-San Francisco; second vice-president, E. C. Kitching, division freight agent, Atchison, Topeka & Santa Fe; secretary, J. W. Klein, general freight agent, Midland Valley; treasurer, J. M. C. Usher, treasurer, Price Sand Company; directors, H. M. Moon, traffic manager, Pure Oil Company, L. M. Klein and I. G. Fidler, division freight agent, St. Louis-San Francisco.

"Industrial Opportunities in New Jersey" is a booklet which has been issued by the Department of Conservation and Development of that State. New Jersey's yearly output of manufactured products is valued at one billion four hundred million. Outside the highly developed industrial areas, centering in Jersey City, Newark, Camden and Trenton, there are many towns which offer cheap land, reasonable taxes and agreeable living conditions. A list of cities and towns of over 500 inhabitants shows that there are 357 such communities in the State. Copies of the booklet may be had from L. G. Gillam, chief of land registry, State House, Trenton.

Coal Production

The total output of bituminous coal during the week of December 10 is estimated by the Geological Survey at 7,235,000 net tons as against 7,104,000 tons in the week preceding. The bulletin says that although soft coal production is normally at a maximum at this season, it has in fact dropped back to the level of last April, normally the lowest month of the year. A year ago production was 12,813,000 tons. The bulletin calls attention to the fact that the movement of coal up the lakes has now virtually ceased and also that during October with a railroad strike in prospect consumers hastened to increase their stocks.

Commission Issues Special Permission for 10 Per Cent Reduction in Agricultural Rates

The Interstate Commerce Commission has issued a special permission order, No. 56,150, cancelling the previous order issued on the same subject, revising the authority it had issued to the railroads to put into effect on short notice and by simplified tariffs the proposed 10 per cent reduction in freight rates on agricultural products for six months. The primary purpose of the new oder is to include the greatly enlarged list of commodities proposed by the railroads. The commission on Decem-

ber 16 denied the petition of the railroads for a rehearing of the case in which it ordered general reductions of rates on grain, grain products and hay in the western district.

The Senate on December 15 adopted a resolution offered by Senator Pittman of Nevada, directing the Interstate Commerce Commission to inquire into the organization, management and control of the Transcontinental Freight Bureau and report for what purpose it was organized, its duties and activities, the carriers it represents and the influence it exercises in the publication of rates, and whether its operation in any manner stifles competition.

Conference With Shippers at Washington

An improvement in the relations between the railroads and certain large organizations or groups of shippers is expected to result from a meeting held in Washington on December 9, attended by a number of railway executives and representatives of various industries at which numerous questions pertaining to pending issues in the transportation field were thoroughly discussed. Following this meeting a transportation committee for agriculture and industry was appointed, an executive committee of seven to represent the larger committee, to deal with the roads in seeking to bring about better economic conditions in the field of transportation. The executive committee consists of J. R. Howard, president of the American Farm Bureau Federation; S. J. Lowell, master of the National Grange; J. A. Campbell president of the Youngstown Sheet & Tube Company; Ernest T. Trigg, president of the National Federation of Construction Industries; Charles Hill, of the Southern Pine Sales Corporation; J. D. A. Morrow, vice-president of the National Coal Association; and F. R. Todd, vice-president of Deere & Co., James A. Emery, counsel for the National Association of Manufacturers, was appointed counsel for the committee. In a statement regarding the conference Mr. Emery said:

"The railroad representatives evidenced their intention to give the benefit of further reduction in operating expenses concurrent with cost adjustments. The committee hopes to reach sound economic conclusions not only upon the rate question, but upon pending issues relating to the control of our national system of transportation."

Joint Commission on Agricultural Inquiry

The work of the Transportation Division of the Congressional Joint Commission of Agricultural Inquiry has developed to a degree that an advisory committee, representative of the three great economic branches of commerce has been appointed, and Chairman Anderson has announced the following personnel of this advisory committee, which is to meet in Washington when the Transportation Division has compiled the facts:

Representing Agriculture.—J. R. Howard, president, American Farm Bureau Federation; Gray Silver, Washington representative, American Farm Bureau Federation; S. J. Lowell, master, National Grange; Milo D. Campbell, president, National Milk Producers' Association, and A. U. Chaney, general manager, American Cranberry Exchange.

Representing Industry.—F. R. Todd, vice-president, Deere & Co.; J. A. Emery, general counsel, National Association of Manufacturers; Thomas A. McCann, vice-president-general manager, Shevlin, Carpenter, Clarke & Co.; A. J. Campbell, president, Youngstown Sheet & Tube Company.

Representing Transportation.—Daniel Willard, president, Baltimore & Ohio; Howard Elliott, chairman, Northern Pacific; L. F. Loree, president, Delaware & Hudson; C. H. Markham, president, Illinois Central; H. M. Adams, vice-president, Union Pacific, and T. C. Powell, vice-president, Erie.

It is proposed that the transportation question shall be considered under six main divisions, as follows: (1) physical property; (2) transportation service; (3) economic relationship to agriculture and industry; (4) finance; (5) administration, and (6) governmental regulation. The work of the committees representing the railroads and producers carried on during the last six months will be reviewed.

The joint commission has submitted a preliminary report to Congress saying it believes an immediate reduction in freight rates on agricultural products is absolutely necessary to a renewal of normal agricultural operations and prosperity; and it recommends prompt action by the railroads and constituted public authorities to that end. It is added, however, that since this recommendation was agreed to, certain reductions in freight rates upon agricultural products have been made.

Railroads Asked to Reduce Export Coal Rates

Railroads were requested to make a reduction of $1 a ton in the freight rates on coal to Atlantic ports for export in order to allow American producers to meet increased competition from English coal, at a conference held at the office of the Interstate Commerce Commission on December 14 for the purpose of discussing ways to meet the British competition. The conference was held under the auspices of Chairman McChord of the Interstate Commerce Commission, Secretary Hoover of the Department of Commerce and Commissioner Thompson of the Shipping Board. It was stated at the conference that British coal is coming into American harbors and being sold at prices below those which American operators can meet under present freight rates and also that British coal is depriving American coal of a market in the Mediterranean and in the West Indies islands. The request for a rate reduction was made by W. L. Andrews, vice-president of the Consolidation Coal Company, speaking on behalf of the mine operators. The railroad traffic executives present had previously declined to make such a reduction on the ground it was too heavy a sacrifice to ask the railroads to make and they said they were not in a position to make definite answers at the conference on the ground that they had recommended against it to their superior officers. Secretary Hoover said the question to be solved was what Americans can do to preserve the markets they had before the war. He said the British had made offers in the West Indies which were lower than can be made by the Americans even with a reduction of $1 in the freight rates. He suggested that if the railroads, the shippers and the mine operators all join in making the sacrifice, it would be possible to retain some of the business. Commissioner Thompson said the Shipping Board would make charters to the mine operators barely high enough to meet the cost of operation as soon as they showed they were ready to go into the business of competing with the British. A committee to consider the whole matter was arranged, consisting of W. V. Hardie, director of traffic of the Interstate Commerce Commission; J. B. Smull, vice-president of the Emergency Fleet Corporation; F. R. Wadleigh, of the Department of Commerce; F. M. Whitaker, vice-president of the Chesapeake & Ohio, and T. F. Farrell, representing coal operators. A report was to be made at a meeting of the committee on Thursday.

G. J. CHURCHWARD, chief mechanical engineer of the Great Western Railway (England), will retire at the end of the present year, and C. B. Collett, the deputy chief mechanical engineer, will succeed him.

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Railway Station in Leipsig, Germany, Destroyed by Fire

Commission and Court News

Interstate Commerce Commission

The commission has suspended until April 17 the operation of certain schedules contained in W. P. Emerson's and J. H. Glenn's tariffs which propose reduced rates on sugar from Southeastern and Gulf Ports to St. Louis, Mo., and related points.

State Commissions

The Public Service Commission of West Virginia has notified the railroads of the state to appear on January 17 to show cause why there should not be a reduction in the freight rates on building materials, road making materials, fertilizers and certain other articles.

The Railroad Commission of the State of California on December 14, authorized a reduction of 10 per cent in the freight rates on the principal farm products of the State. The authorization follows the order of the Interstate Commerce Commission requiring the carriers to make a reduction of 12½ per cent in interstate rates on hay and grain products only. In making the general 10 per cent reduction the California Commission held that that would be more beneficial to the farmers of that State as a whole than a slightly greater reduction on grain and hay alone.

The Louisiana Public Service Commission, holding that the present through train service on the Kansas City Southern's line between Shreveport, La., and Lake Charles, is inadequate for the accommodation of local travel, has ordered the railroad to operate an additional daily passenger train making all local stops between the above mentioned points. This commission has denied the application of the St. Louis Southwestern to discontinue its motor car service between Shreveport, La., and Lewisville, Ark., believing that its discontinuance would cause grave inconvenience and hardship on the communities served by this line.

Personnel of Commissions

Hugh White, heretofore assistant district attorney-general of the state, has been appointed secretary of the Alabama Public Service Commission, in place of Atticus Mullin, resigned.

Orville F. Berry, former chairman of the Illinois Railroad & Warehouse Commission, died suddenly of heart disease in a private hospital at Jacksonville, Ill., on December 19. Mr. Berry was sixty-nine years of age and was a well-known political leader. He was appointed chairman of the Commission in 1909, which position he held for four years.

Interstate Commerce Commissioners Reappointed

The President on December 19 sent to the Senate the nominations of Henry C. Hall and Clyde B. Aitchison for re-appointment as members of the Interstate Commerce Commission for terms of seven years. President Harding has now appointed seven of the eleven members of the commission.

Court News

Consignee's Receipt Conclusive Evidence of Delivery

A carload of goods was unloaded by the railroad at destination and the goods were placed in its warehouse. Next day another car to the same consignee was placed for unloading and a portion of the shipment removed by the consignee, who signed receipts for both cars. The following day the warehouse and the freight car and their contents were destroyed by fire. The Colorado Supreme Court holds that the signing of the receipts was a delivery of the goods, relieving the railroad from liability for the loss.—D. & R. G. v. Johnson (Colo.), 193 Pac. 729.

Tariff Provisions As to Diversion Cannot Be Waived

The New York Appellate Division, Fourth Department, holds that the ordering of a car by a shipper, the sealing of it by the railroad's agent, the issuing of a waybill and shipping directions, the fixing of freight at a lower rate, and its payment by the shipper, brings a shipment within (interstate) tariffs and classifications, whether an actual bill of lading was made out by the railroad's agent or not. The shipping contract is closed, and if the shipper desires to divert the shipment he must do it according to the tariff regulations, which provided that a reconsignment or diversion could only be made if requested in writing.—Porter v. Lehigh Valley, 184 N. Y. Supp. 870.

Rental of Materials for Spur Recoverable After Removal of Connection Track

A railroad company contracted to lease rails and materials to a mining company for its spur track at an agreed rental of a percentage of the market value, with right to terminate the rental by acquiring the materials within a certain time. The railroad also agreed in the same contract to furnish the use of a connection track at the cost of maintenance. The Virginia Supreme Court of Appeals holds that the railroad's removal of the connection track on lessee's discontinuance of the spur did not defeat recovery for the rails and materials, the covenants in the contract being independent.—Miller v. Southern (Va.), 108 S. E. 838.

Burden of Proof in Derailment Cases

In a passenger's action for injuries in a derailment, the Virginia Supreme Court of Appeals holds that an instruction that the passenger need not point out any specific act of negligence, and that there was a presumption the accident was caused by the railroad's negligence, which presumption might be rebutted by evidence that the railroad exercised the highest degree of care to prevent the accident, and inspected the cars by competent persons to see that they were in good order, was erroneous, where the uncontradicted testimony was that immediately after the derailment a careful examination was made of the wheels and every part of the running gear which could have contributed to the derailment, and they were found in excellent condition. A prior inspection, therefore, would have disclosed nothing for the railroad to remedy, and it was error to tell the jury that if it was not made, they must find for the plaintiff.

The court holds the proper application of the maxim res ipsa loquitur to derailment cases to be that if it is just as probable that the derailment is due to some other cause as to the defendant's negligence, there can be no recovery.—Hines v. Beard (Va.), 107 S. E. 717.

On the D. L. & W. West of Scranton, Pa.

Foreign Railway News

New Mechanical Chief on the Great Western of England

LONDON.

G. J. Churchward, chief mechanical engineer of the Great Western Railway (England), will retire at the end of the present year and C. B. Collett, the deputy chief mechanical engineer, will succeed him.

English Road Uses "Shopping Tickets" to Foster Suburban Business

LONDON.

The Great Eastern, the South Eastern & Chatham and the London Brighton & South Coast have introduced "shopping tickets," to be issued from certain stations to London on any day of the week except Saturday and Sunday between 10.30 a. m. and 4.30 p. m., and available to return the same day before 5 p. m. or after 6 p. m., to encourage travel on suburban trains in non-rush hours.

Railway Standard for China

LONDON.

The Bulletin of the Federation of British Industries states that the Chinese Standardization Commission, which was appointed to agree and fix permanent standards for rolling stock and materials throughout the whole government railway system of China, has now agreed to the standards to be adopted for rails and fastenings; sleepers or ties, both ordinary and for bridges; cuts and fills; formation and ballasting; tunnels; clearance and minimum structure gages. Specifications for bridge steel were also accepted.

As regards rolling stock, standard designs were adopted for heavy locomotives—the Pacific type for passenger and the "Mikado" for freight service—with certain alterations to conform to the views of the locomotive superintendents of the various Chinese government railways. Agreement was also reached on standard designs for wheels, axles, trucks, bodies, frames, couplers and so forth for passenger and freight cars, the latter of a capacity of 40-ton, 30-ton and 20-ton and of both steel and wood construction.

Argentine and Chilean Transandine to Combine

The Chilean and Argentine sections of the Transandine Railway, from Los Andes on the western slope of the Cordilleras, by way of Caracoles on the Chilean frontier, to Mendoza on the eastern or Argentine side, will be consolidated under a single management, according to Commerce Reports. This project, presented to the Argentine government by a delegation from Chile in 1919, was approved on the part of Argentina and has recently been sanctioned by the Chilean government.

The Chilean Transandine Railway has never been considered a paying investment, and its financial condition has been such as to discourage the investment of further capital. Prior to the passage of the new law by the Chilean government in September, 1921, bonds were outstanding to the amount of some $7,000,000, of which the principal was guaranteed by a mortgage on the railroad property, and interest at the rate of 5 per cent was guaranteed by the Chilean government for a period of 20 years. The new law provides for replacing these bonds with Chilean government bonds to the value of some $4,000,000, with guaranteed interest at the rate of 8 per cent. The state will receive 70 per cent of the stock of the company and will take an active part in the administration of the road. The Chilean Transandine proposes to issue new bonds to the extent of about $2,500,000, to be used in making the necessary improvements in connection with the consolidation.

A marked improvement in traffic conditions and facilities may be looked for as a result of this important step. In passing over the Andes the railway crosses a rough and rugged country. In the winter months the heavy snow and avalanches make continuous traffic impossible, notwithstanding the protection offered by numerous avalanche sheds along the line. The right of way is blockaded for months at a time by snows; in 1914 traffic was interrupted for 190 days, in 1915 for 131 days, and in 1919 for 156 days.

The financial arrangements made by the two governments will permit of needed improvements which it is hoped will result in a steady and uninterrupted service. Tunnels are to be lengthened and more adequate protection against avalanches constructed; new and modern rolling stock and equipment will be purchased, the railway shops will be modernized, and electrification of the line will be undertaken section by section.

The free interchange of traffic between the two nations, heretofore impeded by protective tariffs, will be encouraged and fostered by the establishment of new and liberal tariff regulations which will permit the natural flow of international trade between the territories served by the lines. All material used for construction, as well as rolling stock and equipment imported into Chile, will be exempt from custom duties. The rates on traffic will be fixed by agreement between the Chilean and Argentine governments.

British Railwaymen and the Eight-Hour Day

LONDON.

The locomotive branches of the National Union of Railwaymen have been raising the question of the eight-hour day in connection with enginemen and firemen and resolutions have been passed by branches of the Associated Society of Locomotive Engineers and Firemen refusing to work systematic overtime. The character of the work of enginemen, it seems to be agreed, may make it necessary to work occasionally for a longer period than eight hours, and there is apparently no objection to overtime arising from the difficulty of arranging duties so that the eight-hour day shall not be exceeded. The object of the action which is now being taken by the unions is to abolish systematic overtime.

C. T. Cramp, industrial secretary of the National Union of Railwaymen, speaking at a meeting, said that there was one thing on which they would not give way—the principle of the eight-hour day. He would also say candidly and fearlessly that the eight-hour day meant eight hours of honest work per day. Let them, as railwaymen, endeavor by co-operation to make the railways so remunerative that the companies could afford to give the best of working conditions.

THE CANADIAN PACIFIC, for the first time, is planning to use New York as a port of departure for its passenger steamers. During the war twelve of the company's steamers carried troops and supplies from New York. The "Empress of Scotland," 25,000 tons, leaves on February 4, and the "Empress of France," 18,500 tons, on February 11, both on Mediterranean cruises.

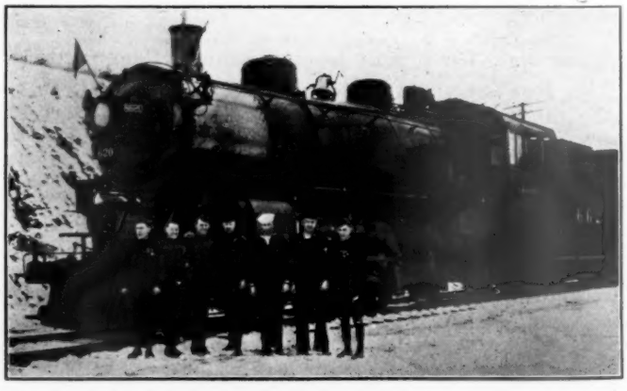


Photo by Underwood & Underwood

Train Crew—All Veterans of the War—of Marshal Foch's Special Train on the C. M. & St. P.

Equipment and Supplies

Locomotives

THE UNION PACIFIC has ordered 1 Mountain type locomotive from the American Locomotive Company.

THE CENTRAL OF NEW JERSEY, reported in the *Railway Age* of December 17, as asking for prices on 25 Mikado type locomotives, has ordered these locomotives from the American Locomotive Company.

Freight Cars

THE RUTLAND is inquiring for 100 steel underframes or center constructions for flat cars.

THE STANDARD OIL COMPANY, New York, is inquiring for 2 low side gondola or flat cars of 50-ton capacity.

THE LAKE CHAMPLAIN & MORIAH is inquiring for from 6 to 10 center dump, hopper ore cars, of 50-ton capacity.

THE UNION PACIFIC has awarded a contract for the repairs on 500 freight cars to the Pacific Car & Foundry Company, Seattle, Wash.

THE GRAND TRUNK, reported in the *Railway Age* of December 17, as inquiring for 250 refrigerator cars, is also inquiring for 400 refrigerator cars additional.

THE NEW YORK STEEL EXCHANGE, 233 Broadway, New York City, is inquiring for a number of tank cars for export, to include cars of 1 meter, 1.35 meter and 1.676 meter gage.

Passenger Cars

THE CHICAGO GREAT WESTERN is inquiring for one combination observation, parlor and buffet car.

THE UNION PACIFIC.—Inquiry for cars for passenger service noted in the *Railway Age* of December 10, includes twenty-five 69-ft. baggage cars, 20 all-steel coaches and 18 all-steel observation cars.

THE SPOKANE, PORTLAND & SEATTLE has purchased one Mack A. C. rail car, a combination gasoline passenger and baggage coach, from the International Motor Company, 25 Broadway, New York.

Iron and Steel

THE KANSAS CITY TERMINAL is in the market for 1,000 tons of 90-lb. rails and 3,000 angle bars.

THE ERIE will let contracts in the near future for 37,500 tons of rail for its 1922 requirements.

THE GRAND TRUNK ordered recently 15,000 tons of rail from the Dominion Iron & Steel Company, and 14,000 tons from the Algoma Steel Corporation.

THE KANSAS, OKLAHOMA & GULF has awarded a contract for 473 tons of steel to be used for a bridge in Muskogee County, Oklahoma, to the Pan-American Bridge Company, Newcastle, Indiana.

THE CHICAGO, BURLINGTON & QUINCY is negotiating with the Illinois Steel company and the Colorado Fuel & Iron Company for approximately 25,000 tons of rails for delivery during the year 1922.

THE ST. LOUIS SOUTHWESTERN, reported in the *Railway Age* of October 22, as inquiring for 10,000 tons of rails for 1922 delivery, has ordered this tonnage from the Illinois Steel Company.

Machinery and Tools

THE ERIE has bought a 25-ton gantry crane from the Niles-Bement-Pond Company.

THE NEW YORK CENTRAL has bought a 53-in. boring mill from the Niles-Bement-Pond Company.

THE DELAWARE & HUDSON is inquiring for a 22-in. engine lathe, also a 30-in. engine lathe, 1, 16-in. portable lathe, 1, 60-in. planer and 1, 8-spindle automatic valve grinder.

THE SEABOARD AIR LINE is inquiring for machine shop tools as follows: 2, 30-in. engine lathes, also a 20-in. engine lathe; 1, portable crank pin truing machine; 1, 36-in. draw-cut shaper; 1, 3,000-lb. steam hammer; 1, 42-in. car wheel borer; 1, 48-in., 400-ton double end wheel press; 1, 2 in. by 26 in. turrent lathe; 1, 36-in. vertical turret lathe; 1, 28-48 in. gap lathe, and 1 turret lathe arranged for bar stock.

THE KANSAS CITY SOUTHERN will make extensions to the power plant at its Pittsburg, Kan., shops, including the installation of a 500 k. w. generator unit, 3,000 cu. ft. air compressor, 350 h. p. boiler and the equipping of new and existing boilers with superheaters, soot blowers and powdered coal preparing, handling and burning equipment, all of which work is being done under the supervision of the company's consulting engineer, John E. Muhlfeld, New York City.

Miscellaneous

THE CHICAGO, ROCK ISLAND & PACIFIC has closed bids on 2,500,000 ft. of lumber for various purposes.

THE JAPANESE GOVERNMENT RAILWAYS are inquiring through a New York Japanese export house for 6,500 axles, for railway freight cars.

THE SOUTH MANCHURIAN RAILWAY, Korean Lines, is inquiring through New York export houses for various types of fittings for passenger cars.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, December 28, for its requirements until April 1, 1922, of gasolene, kerosene and all grades of oil.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for approximately 8,000 gal. of kerosene, 9,000 gal. of gasoline and 2,000 gal. of distillate, bids to be submitted on or before December 26, 1921.

THE ATCHISON, TOPEKA & SANTA FE, reported in the *Railway Age* of December 3, as receiving bids for three oil storage tanks, including pipe connection and unloading facilities at Argentine, Kansas, has awarded this contract to the Federal Engineering Company, Chicago.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, January 4, at Roanoke, Va., for 500 gross tons steel rail, 120 rods wire fencing, parts for electrical apparatus, 100 steel zees and its requirements from January 1 to June 30, 1922, of steel locomotive driving, truck and tender tires, and also steel springs.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for bolts and nuts of different sizes; also iron bars, billets, plates, shapes, steel sheets, locomotive tires, nails, wire and fencing wire, for the period from January 1, 1922, to April 1, 1922, bids to be closed at noon January 3, 1922. This company is also inquiring for requirements of shop machinery oils for the period from January 1, 1922, to April 1, 1922, bids to be in before 12 o'clock noon of December 27, 1921.

Signaling

THE GRAND TRUNK has awarded a contract for one 24-lever Saxby & Farmer mechanical interlocking machine and other materials for installation at Mack avenue, Detroit, Mich., to the General Railway Signal Company. The machine will have 18 working levers and 6 spare spaces and the installation will be made by railroad forces.

Supply Trade News

The **Combustion Engineering Corporation,** New York, has opened a new branch office at 806 First National Bank building, Pittsburgh, Pa., in charge of W. C. Stripe, formerly manager of the Philadelphia office.

Arthur P. Bowen has been elected assistant to the vice-president of the **Ryan Car Company,** Chicago, and not to the office of vice-president, as was incorrectly reported in the *Railway Age* of December 3 (page 1120) and December 17 (page 1231).

H. O. Garman, who was for a period of 14 years chief engineer of the Public Service Commission and the Railroad Commission of the State of Indiana, has entered private practice in consulting engineering and the management and operation of public utilities, with headquarters at Indianapolis, Indiana.

The merger of the **Haskell & Barker Car Company, Inc.,** with the **Pullman Company,** was approved by the stockholders of the Pullman Company at Chicago, on December 20. The directors have been increased from nine to twelve by the election of Edward F. Carry, president of the Haskell & Barker Car Company; John R. Morrow, and Arthur O. Choate. The plan which has been approved appeared in the *Railway Age* of November 26, page 1068.

The **Richardson-Phenix Company,** Milwaukee, Wis., and the **S. F. Bowser & Co., Inc.,** Fort Wayne, Ind., have consolidated and will henceforth be known as the **S. F. Bowser & Co., Inc.,** with headquarters at Fort Wayne. The filtration and lubrication appliance business of both companies will be conducted by the Richardson-Phenix division, S. F. Bowser & Co., Inc. **J. William Peterson,** president of the Richardson-Phenix Company, will assume the office of vice-president of the S. F. Bowser & Co., Inc., and will be in charge of the Richardson-Phenix division.

John W. Duntley, one of the founders of the **Chicago Pneumatic Tool Company** and from 1895 to 1909 president of that concern, was killed by an automobile truck at Chicago on December 15. Mr. Duntley was born at Wyandotte, Mich., on August 16, 1863, and entered business as a foundryman in 1878. From 1884 to 1895 he was engaged in the railway supply business and upon the latter date he organized the Chicago Pneumatic Tool Company. From this date to 1909 he was engaged in expanding this organization, enlarging the scope of the business at the same time by absorption and amalgamation both in this country and abroad. In 1909 he organized and became president of the Duntley Manufacturing Company, manufacturers of the pneumatic cleaners. Of late years he devoted his energy to the Duntley Automobile Accessory Company, Chicago, of which he was president. He was also president of the Libertad Mining & Smelting Company. In 1900, he was decorated with the cross of the Legion of Honor by the president of France.

Obituary

Clarence E. Rood, sales manager of the Gould Coupler Company, New York, died on December 11 after a brief illness, at his home at the Algonquin Hotel, New York City. Mr. Rood was born in Erie, Pa., and early in his career was general manager of the American Express Company in St. Louis, Mo. Later he went to Buffalo where for a time he was a member of Rood & Brown, car wheel builders. He subsequently owned and operated the Rood Malleable Iron Company, Lancaster, N. Y. About 12 years ago he entered the service of the Gould Coupler Company as a representative at New York and at the time of his death was sales manager of that company.

Railway Construction

CHICAGO, BURLINGTON & QUINCY.—This company contemplates the construction of the first unit of a locomotive shop at Denver.

CHICAGO, MILWAUKEE & GARY—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension between Aurora and Joliet, Ill., where the company now operates over the tracks of the Elgin, Joliet & Eastern.

GREAT NORTHERN.—This company contemplates the construction of a second main track between Lamona, Wash., and Bluestem, a distance of 22 miles.

ILLINOIS CENTRAL.—This company is receiving bids for the construction of a car shed at McComb, Miss. The same company is also receiving bids for the construction of a frame viaduct over its tracks at Fulton, Ky.

LOUISVILLE & NASHVILLE.—This company contemplates the construction of a reinforced concrete viaduct over its tracks on Lebanon avenue, Belleville, Ill. Plans for this work have been submitted to the city for approval.

MISSOURI PACIFIC.—This company contemplates the construction of a station at Harrisburg, Ark., and one at Hoxie. Plans for the work have been submitted to the Arkansas Railroad Commission.

MISSOURI PACIFIC.—This company has awarded a contract to Gillespie & Daly for the construction of a two-story interlocking and signal tower at Hiawatha, Kansas.

MORGAN'S LOUISIANA & TEXAS.—This company has been ordered by the Louisiana Public Service Commission to construct a station at Franklin, La. Plans are to be submitted to the commission for its approval within one year and the work must be commenced within sixty days thereafter.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This company contemplates the construction of an underpass at the intersection of the state highway and the company's tracks at White Bluff, Tenn.

NEW ORLEANS, TEXAS & MEXICO.—This company has been authorized by the Louisiana Public Service Commission to continue the construction of a station at Krotz Springs, La. Work had just been started on this station the latter part of November when citizens at Krotz Springs petitioned the commission to have the location of the station changed.

TEXAS & PACIFIC.—This company has been ordered by the Louisiana Public Service Commission to construct a station at Innis, La., plans of which must be submitted to the commission for its approval by February 11, 1922.

UNION STATION, LOS ANGELES, CAL.—The Atchison, Topeka & Santa Fe, the Southern Pacific, and the Los Angeles & Salt Lake, have been ordered by the Railroad Commission of California to erect a union station on the Plaza site, Los Angeles, Cal. This order is contained in a decision on the rehearing of the Los Angeles terminal case which, with certain modifications, reaffirmed the former ruling by that body. The commission also upheld its former ruling requiring the separation of grades by the construction of viaducts over crossings adjacent to the Los Angeles river at Aliso, Macy and East Seventh streets. In connection with the latter order, the city of Los Angeles will bear a share in the expense of the grade crossing elimination.

WENATCHEE SOUTHERN.—This company, which has been organized recently to construct a railroad from Wenatchee, Wash., to Kennewick, a distance of about 132 miles, has completed a survey and has purchased almost all the right of way necessary for the construction of the line. The road will follow the Columbia river connecting at Pasco, Wash., with the Northern Pacific and the Spokane, Portland & Seattle, and at Kennewick with the same roads, and the Oregon-Washington Railroad & Navigation. At Wenatchee it will connect with the Great Northern.

Railway Financial News

ATLANTA & ST. ANDREWS BAY.—*Order to Abandon.*—After rehearing the case in which this company was authorized to abandon a part of its line, the Interstate Commerce Commission has extended until further order the experimental period of abandonment provided for in the original order.

BOSTON & MAINE.—*Stock offer.*—An offer by a minority group of Boston & Maine stockholders to buy the shares of that company now held by the New York, New Haven & Hartford, was made at a hearing held by Attorney General Daugherty in Boston, Mass., on December 13. See New York, New Haven & Hartford below.

BUFFALO, ROCHESTER & PITTSBURGH.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the sale of $3,949,000 of consolidated mortgage 4½ per cent bonds at not less than 82½ per cent of par and accrued interest.

CANADIAN PACIFIC.—*Sells $25,000,000 Stock.*—A banking syndicate, headed by the National City Company, New York, has purchased $25,000,000 Canadian Pacific Railway Company 4 per cent coupon consolidated debenture stock, and is offering the new issue at 78, to yield 5.13 per cent. All previous issues of debenture stock have been placed in London.

See editorial comment in this issue.

CAROLINA, CLINCHFIELD & OHIO.—*Asks Authority to Pledge Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge with the Secretary of the Treasury as collateral security for a loan of $6,000,000, which it had applied for, $1,000,000 of its first mortgage 5 per cent 30-year gold bonds and $6,000,000 of 5 per cent Elkhorn first mortgage gold notes. The company some time ago applied for authority to issue bonds for refunding purposes but later withdrew the application and substituted the application for a loan.

CENTRAL OF GEORGIA.—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

CHESAPEAKE & OHIO.—*Authorized to Lease Subsidiary.*—The Interstate Commerce Commission has issued an order approving the acquisition of control of the railroad of the Chesapeake & Ohio of Indiana by lease. The Chesapeake & Ohio was also authorized to assume obligation and liability as lessee in respect of $7,711,000 of first mortgage gold bonds of the Chesapeake & Ohio of Indiana.

CHICAGO & EASTER ILLINOIS.—*New Securities Ready.*—Kuhn, Loeb & Co., reorganization managers, have announced to holders of certificates of deposit, representing bonds of the various companies deposited under or subject to the plan and agreement of reorganization, that the general mortgage, 5 per cent gold bonds in denominations of $1,000, $500 and $100, and preferred and common stock certificates of the new company, together with cash payments specified in the plan, will be ready for distribution on and after December 27, 1921.

The details of the reorganization plan were given in the *Railway Age* of April 8, 1921, page 913.

To Pay Off Receiver's Certificates.—W. J. Jackson, receiver, has announced that he will pay in full at the Equitable Trust Company, New York, on and after December 23, the $6,000,000 receiver's certificates issued under date of July 1, 1916.

CISCO & NORTHEASTERN.—*Asks a Loan.*—This company has applied to the Interstate Commerce Commission for a loan of $300,000 for five years to retire existing obligations.

CHICAGO & NORTH WESTERN.—*Authorized to Procure Authentication of Bonds.*—The Interstate Commerce Commission has granted authority to this company to procure the authentication and delivery of $375,000 of general mortgage gold bonds to be held in the Treasury until the further order of the commission. Action on a request for authority to issue bonds in 1922 and subsequent years was deferred, the commission saying that it does not appear to be necessary at this time to grant the authority requested. The company was also authorized to procure the authentication and delivery of $1,000,000 of general mortgage gold bonds of 1987 and $3,000,000 of first and refunding mortgage gold bonds to be held in the Treasury until the further order of the commission.

CHICAGO, BURLINGTON & QUINCY.—*Asks Authority to Issue Bonds.*—This company has filed an application with the Interstate Commerce Commission for approval of a mortgage to the First National Bank and Frazier L. Ford, of New York and the issue of $30,000,000 first and refunding mortgage bonds with interest not to exceed 5 per cent to be dated August 1, 1921, maturing August 1, 1971, for the purpose of providing funds for the company's estimated requirements for additions and betterments in 1922. This application was filed as a supplement to the company's application filed a year or so ago, on which the commission refused to authorize an issue of $80,000,000 of bonds for dividend purposes, but granted the right to have considered on the same record an application to issue bonds for other purposes.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Asks Authority to Exchange Bonds.*—This company has applied to the Interstate Commerce Commission for authority to exchange $3,493,000 of first and general mortgage 5 per cent gold bonds, series A, for an equal amount of series B bonds at 6 per cent, dated January 2, 1922, and maturing May 1, 1966.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*New York Central Offers to Buy Stock.*—See New York Central.

CUBA RAILROAD.—*Bonds Sold.*—The National City Company, New York, has sold at 99½, to yield over 7½ per cent, $4,000,000 first lien and refunding mortgage gold bonds, Series A, non-callable, dated December 1, 1921, due December 1, 1936.

DELTA SOUTHERN.—*Sold.*—This road, formerly operated as a branch of the Southern Railway, was sold in three sections at Greenville, Miss., on December 6. Bids were offered for the entire road. G. B. Kellogg bought the section between Richey and Percy for $20,000; W. A. Swift and associates bid in the section between Ittabena and Belzoni for $50,000, and V. A. Denslow bought the Napanee branch for $10,000.

DETROIT, TOLEDO & IRONTON.—*Earnings in September and October.*—The figures follow:

	September 1921	October 1921
Operating revenues		
Freight	$732,783	$627,672
Passenger	13,172	11,417
Total (inc. misc.)	759,757	652,438
Operating expenses		
Maintenance of way and structures	161,425	145,314
Maintenance of equipment	142,897	61,889
Traffic	8,089	7,079
Transportation	237,336	277,970
General	22,537	22,249
Total	572,278	514,504
Operating ratio	75.3	78.9
Net from railway operations	187,479	137,934
Operating income	170,289	120,723
Net after rentals	46,749	15,191
Net after rentals, 10 months, 1921	887,596	
Net after rentals, 10 months, 1920	def. 1,097,265	

See also editorial in this issue entitled "Net Income of Ford's Railroad Steadily Declines."

DULUTH, MISSABE & NORTHERN.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $1,174,000 of general mortgage 5 per cent gold bonds for the purpose of refunding a like amount of first division mortgage bonds which mature January 1.

ERIE & PITTSBURGH.—*Plans Stock Increase.*—The stockholders will vote February 10 on increasing the special guaranteed betterment stock from $2,500,000 to $7,500,000. A portion of the funds to be derived from the new stock will be paid to the lessee of the road, the Pennsylvania Railroad Company, for improvements on and additions to the leased property made by the lessee and approved by the directors of the Erie & Pittsburgh.

KANAWHA & MICHIGAN.—*Lease to New York Central.*—See New York Central.

KANAWHA & WEST VIRGINIA.—*Lease to New York Central.*—See New York Central.

LOUISVILLE & NASHVILLE.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the issue by selling at not less than 96 and accrued interest of $12,753,000 of first and refunding mortgage 5½ per cent gold bonds and has also granted authority to procure the authentication and delivery by the trustee of $15,862,000 of the bonds. The company's application also asked authority to issue $53,000,000 of capital stock as a stock dividend. Consideration of this has been held in abeyance by the commission.

LUFKIN, HEMPHILL & GULF.—*Acquisition.*—This road, extending from Bronson, Texas, to Hemphill, 11 miles, has been acquired by T. L. L. Temple and associates, who own the controlling interest in the Texas South-Eastern Railroad. The Lufkin, Hemphill & Gulf connects with the Gulf, Colorado & Santa Fe at Bronson, Tex.

NEW YORK CENTRAL.—*Asks Authority to Acquire Big Four Stock.*—This company has filed an application with the Interstate Commerce Commission asking authority to acquire the remaining outstanding capital stock of the Cleveland, Cincinnati, Chicago & St. Louis, which it does not already own, and also to issue its own capital stock to the amount of $23,478,880, to be exchanged from time to time in payment for the stock of the Big Four, on the following basis: $13,478,880 for the common stock on the basis of 80 for 100, and $10,000,000, par for par, for the 5 per cent preferred stock of the Big Four. Of the common stock of the Big Four the New York Central owns $30,207,700 and $16,456,821 is outstanding in the hands of the public. Of the preferred stock $9,988,600 is outstanding and none is owned by the New York Central. The application states that the purchase "will bind the two carriers, which are component parts of a single system, more closely together and tend toward a unification of their properties." The Big Four has also asked authority to guarantee $2,118,000 of the 4½ per cent 50-year first mortgage gold bonds of the Evansville, Mt. Carmel & Northern, now held in its treasury, with which it proposes to acquire stocks and bonds of the Peoria & Eastern.

To Lease Toledo & Ohio Central.—Authorization of a lease of the Toledo & Ohio Central, including with it the Zanesville & Western, the Kanawha & Michigan and the Kanawha & West Virginia, to the New York Central, for a rental of fixed charges and taxes and in addition thereto an amount equal to the net earnings of the Toledo & Ohio Central for the year 1921, and in the case of the Kanawha & Michigan of 6 per cent on its stock, was also announced.

The making of the leases is subject to the approval of the Interstate Commerce Commission, for which application is about to be made.

The New York Central controls all of the stock of the lesser companies except a few shares of the stock of the Kanawha & Michigan.

NEW YORK, NEW HAVEN & HARTFORD.—*Attorney General's Hearing.*—Attorney General Harry M. Daugherty has taken under advisement the results of his investigation at Hartford, Conn., and at Boston, Mass., on December 12 and 13, respectively, preliminary to enforcement or modification of the federal decree of dissolution of 1914, which directed the road to sell various trolley lines and the Boston & Maine Railroad holdings.

PITTSBURGH & WEST VIRGINIA.—*Application Denied.*—The Interstate Commerce Commission has denied the application of this company to issue capital stock and to assume obligation and liability in respect of certain securities in connection with the purchase of the property and franchise of the West Side Belt upon the ground that the issue and assumption is not for a lawful object since the applicant has not obtained authority for the acquisition under section 5 of the Interstate Commerce Act, which applies to consolidations. Applicant owns all the stock of the Belt Company and is operating the road jointly with its own. Section 5 authorizes the commission to approve the acquisition by one carrier of the control of another in any manner not involving the consolidation of such carriers into a single system for ownership and operation. The opinion contains a lengthy discussion of the interpretation of the section. Commissioner Potter dissented.

SOUTHERN.—*Asks Authority to Issue Bonds.*—Application has been filed with the Interstate Commerce Commission for authority to issue $30,000,000 development and general mortgage 6½ per cent gold bonds, series A, payable April 1, 1956, including $5,225,000 of bonds already nominally issued, the proceeds to be used for the payment of $22,588,000 of three-year 6 per cent secured gold notes maturing March 1, a demand loan of $2,355,270 from the War Finance Corporation and to reimburse the treasury for capital expenditures.

SOUTHERN.—*Authorized to Procure Authentication of Bonds.*—This company has been authorized by the Interstate Commerce Commission to procure the authentication and delivery of $5,225,000 of development and general mortgage 4 per cent gold bonds to be held in the Treasury until the further order of the commission.

TENNESSEE MIDLAND.—*Asks Authority to Issue Securities.*—Caldwell & Co., of Nashville, Tenn., reorganization managers, have filed an application with the Interstate Commerce Commission on behalf of the Tennessee Midland Railroad, which is proposed to be organized to acquire the property of the Tennessee Central, to issue bonds and stocks for that purpose, for the purpose of acquiring the property.

TEXAS SOUTH-EASTERN.—*Acquisition.*—See Lufkin, Hemphill & Gulf.

TOLEDO & OHIO CENTRAL.—*Lease to New York Central.*—See New York Central.

WISCONSIN CENTRAL.—*Asks Authority to Issue Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue promissory notes to the Minneapolis, St. Paul & Sault Ste. Marie in the amount of $2,305,822 for ten years at 6 per cent for money advanced by the Soo. It also asks permission to assign and deliver to the Soo $3,547,000 of its first and refunding mortgage bonds as security for the notes.

Tentative Valuations

The Interstate Commerce Commission has issued tentative valuation reports in which it states the final value as follows:

Southern Illinois & Missouri Bridge Company, 1915....	$3,182,660
Waupaca-Green Bay, 1916.....	114,201

Dividends Declared

Albany & Susquehanna.—Special, 2 per cent, payable January 7 to holders of record December 24.

Allegheny & Western.—3 per cent, semi-annually, payable January 3 to holders of record December 22.

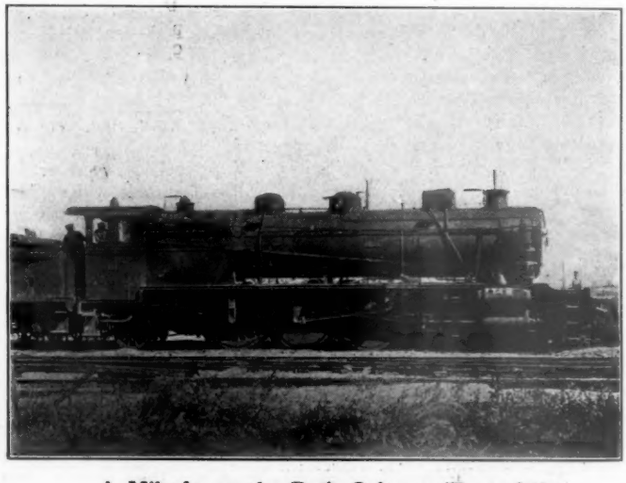
Atlantic Coast Line.—Common, 3½ per cent, semi-annually, payable January 10 to holders of record December 23.

Canada Southern.—1½ per cent, semi-annually, payable February 1 to holders of record December 30.

Cleveland, Cincinnati, Chicago & St. Louis.—Preferred, 1¼ per cent, quarterly, payable January 30 to holders of record December 30.

Louisville & Nashville.—3½ per cent, semi-annually, payable February 10 to holders of record January 15.

New York Central.—1¼ per cent, quarterly, payable February 1 to holders of record December 30.



A Mikado on the Paris-Orleans (France)

Annual Report

Central of Georgia Railway Company—Twenty-sixth Annual Report

SAVANNAH, GA., April 7, 1921.

To the Stockholders:

The Board of Directors submits its report for the year ended December 31, 1920.

RELEASE FROM FEDERAL CONTROL

Federal control continued to midnight of February 29, 1920, when your company resumed possession and operation of its transportation properties for its own account. The income account herein shown does not include operating revenues, operating expenses and taxes of the United States Railroad Administration for the months of January and February, but to facilitate comparison we submit tables of operating revenues, operating expenses and taxes, and show comparisons with previous years, which include operations for the two months of Federal control.

ACCOUNTS WITH DIRECTOR GENERAL

Settlement with United States Railroad Administration of accounts growing out of Federal control is in progress but not completed. The amounts shown on the balance sheet as due to and from your company are subject to this final settlement.

TRANSPORTATION ACT, 1920

The Transportation Act, 1920, was approved by the President on February 28, 1920. It contains much new legislation and many material changes in laws previously enacted.

GOVERNMENT GUARANTY

The amount accrued to your company by the Government under the six months' guaranty given by the Transportation Act, has not yet been ascertained and certified by the Interstate Commerce Commission; but, pending final audit and approval of the accounts submitted, substantial advances and partial payments have been collected. Income account as submitted includes an estimated credit of the amount payable under the terms of the guaranty.

MILES OF ROAD OPERATED

The miles operated as of December 31, 1920, were 1,913.63.
The miles operated as of December 31, 1919, were 1,918.29.

INCOME

The income for year 1920, compared with the previous year was as follows:

	1920		1919	Increase or Decrease
Railway operating revenues	$20,676,551.05		.....	$20,676,551.05
Railway operating expenses	21,102,368.50		$52,858.97	21,049,509.53
Net revenue railway operations	$425,817.45	(R)	$52,858.97	—$372,958.48
Railway tax accruals	$795,151.18		$126,929.88	$668,221.30
Uncollectible railway revenues	5,584.69		.....	5,584.69
Total	$800,735.87		$126,929.88	$673,805.99
Railway operating income	$1,226,553.32	(R)	$179,788.85	—$1,046,764.47
Net revenue—Miscellaneous operations	8,768.46		13,118.24	—4,349.78
Total operating income	$1,217,784.86	(R)	$166,670.61	—$1,051,114.25
Compensation from U. S. R. A.	$732,892.77		$3,408,808.94	—$2,675,916.17
Non-operating income	5,116,916.37		830,940.12	$4,285,976.25
Total	$5,849,809.14		$4,239,749.06	$1,610,060.08
Gross income	$4,632,024.28		$4,073,078.45	$558,945.83
Deductions from gross income	3,115,316.83		2,790,427.98	324,888.85
Net corporate income	$1,516,707.45		$1,282,650.47	$234,056.98

(R)—Red.

OPERATING REVENUES

(12 Months)

There was an increase of $2,349,183.54 or 17.88 percent. in freight revenue; $304,343.94 or 4.69 percent. in passenger revenue; $732,249.87 or 38.22 percent. in other operating revenues; or $3,385,777.35 or 15.61 percent. in railway operating revenues.

OPERATING EXPENSES

(12 Months)

Operating Ratio:

The operating ratio was 102.60, an increase of 13.70 points or 15.40 percent.

Maintenance of Way and Structures:

Expenditures for maintenance of way and structures were $4,942,898.33, an increase of $574,157.19, or 13.14 percent.

Maintenance of Equipment:

Expenditures for maintenance of equipment were $6,163,735.93, an increase of $1,691,962.49, or 37.84 percent.

Charges for depreciation of equipment were $606,068.42, a decrease of $22,649.82, or 3.60 percent.

The average miles per serviceable locomotive were 35,729, an increase of 1,925 miles, or 5.69 percent. The average age of locomotives was 17.3 years, compared with 16.7 years for the preceding year.

Transportation Expenses:

Transportation expenses were $12,908,739.14, an increase of $3,666,619.02, or 39.67 percent.

TAXES

(12 Months)

Accrued taxes were $925,198.85, a decrease of $17,453.36, or 1.85 percent.

FINANCIAL

The General Balance Sheet, Table 4, shows the financial condition of your company at December 31, 1920.

Capital Stock:

There has been no change in capital stock.

Funded Debt:

Since December 31, 1919, equipment trust obligations aggregating $100,000 and Greenville and Newnan Maine Line Bonds and Upper Cahaba Branch Bonds aggregating $60,000 matured and were paid.

Loans and Bills Payable:

Pending collections from the Government under the six months' guaranty, and from the United States Railroad Administration, your company borrowed from banks in December, $575,000.00 for a short period. The notes have been paid since December 31st.

Non-Negotiable Debt to Affiliated Companies:

The increase of $553,388.33 in this item is due in part to the same cause, and in part to the purchase of $525,000.00 of Fourth Liberty Loan Bonds to use as collateral security in connection with an advance made by the United States on account of the six months' guaranty.

Securities Owned:

The increase in Other Investments—Bonds reflects the above noted purchase of Liberty Bonds.

Dividends:

During the year preferred dividends, Nos. 14 and 15 ($900,000.00) at a stipulated rate of six percent. per annum, and common dividends Nos. 9 and 10 ($250,000.00) at a rate of five percent. per annum were declared and paid.

Dividends Receivable:

During the year Ocean Steamship Company of Savannah paid from accumulated surplus an extra dividend of $40.00 per share, of which your company received $799,640.00.

Guaranty of Ocean Steamship Company Bonds:

On July 1, 1920, the First Mortgage Twenty-Year Five Percent. Bonds of Ocean Steamship Company of Savannah aggregating $1,000,000.00 matured and were, by arrangement with the holders and after being unconditionally guaranteed as to principal and interest by this company, extended at seven percent. for five years Until July 1, 1925.

ROAD AND EQUIPMENT

The expenditures for road and equipment, including additions and betterments on leased railway property during the twelve months ended December 31, 1920, were as follows:

	Corporate	Federal	Total
Engineering	$9,554.79	$3,570.31	$13,125.10
Land for transportation purposes	15,408.25	22.30	15,430.55
Grading	67,167.14	(R)17,262.46	49,904.68
Bridges, trestles and culverts	43,893.89	(R)11,844.19	32,049.70
Ties	24,968.30	(R)29,327.65	(R)4,359.35
Rails	64,514.10	(R)50.46	64,463.64
Other track material	147,587.71	(R)149,149.24	(R)1,561.53
Ballast	25,667.90	(R)1,246.45	24,421.45
Track laying and surfacing	39,250.38	(R)11,196.32	28,054.06
Right of way fences	1,334.97	153.10	1,488.07
Crossings and signs	19,388.67	1,314.93	20,703.60
Station and office buildings	242,569.52	3,285.79	245,855.31
Roadway buildings	8,276.64	(R)4,856.26	3,420.38
Water stations	4,687.94	592.58	5,280.52
Fuel stations	(R)6,995.87	(R)2,004.53	(R)9,000.40
Shops and enginehouses	69,851.05	(R)1,727.10	68,123.95
Telegraph and telephone lines	752.34	(R)45.97	706.37
Signals and interlockers	4,968.75	2,425.94	7,394.69
Power line poles and fixtures	.....	8.54	8.54
Miscellaneous structures	240.42	(R)157.27	83.15
Paving	1,948.92	.....	1,948.92
Roadway machines	14,502.75	(R)495.39	14,007.36
Assessments for public improvements	8,678.65	916.05	9,594.70
Shop machinery	28,838.02	(R)922.47	27,915.55
Power sub-station apparatus	.....	(R)231.67	(R)231.67
Total way and structures (less property retired)	$837,055.23	(R)$218,227.89	$618,827.34
Steam locomotives	21,306.43	(R)517.25	20,789.18
Freight train cars	17,792.07	5,714.68	23,506.75
Passenger train cars	35,031.10	(R)1,008.33	34,022.77
Work equipment	89,355.38	(R)744.70	88,610.68
Miscellaneous	.....	783.14	783.14
Total	$163,484.98	$4,227.54	$167,712.52
Less equipment retired	226,807.02	30,832.96	257,639.98
Total equipment	(R)$63,322.04	(R)$26,605.42	(R)$89,927.46
Total net, road and equipment	$773,733.19	(R)$244,833.31	$528,899.88

(R)—Red.

PHYSICAL CHANGES

Roadway and Structures:

There were 58.3710 miles of track relaid with 90 pound new steel rail; .0094 miles with 80 pound new steel rail; and .0281 miles with 70 pound new steel rail; making a total of 58.4085 miles of track relaid with new steel rail; which includes 10.0293 miles of track relaid with new steel rail of the same weight. 26.5586 miles of track were relaid with second hand steel rail, replacing rail of lighter pattern. 4.6206 miles of track were relaid with second-hand steel rail, replacing rail of same pattern. Total mileage of track relaid with new and second-hand steel rail was 89.5877. In addition 5.6663 miles of track between East Point and Atlanta were laid with 90 pound new steel rail, replacing 80 pound steel rail, for account of the Atlanta and West Point Railroad Company, which track is operated as a second main line by your company, under trackage rights.

$117,367.41 were expended for tie plates, etc., applied to track.

69 new industrial tracks were added, aggregating 2.29 miles in length, while 19 tracks were removed, aggregating 1.67 miles; making net increase of 50 tracks and 62 miles.

37 new company sidings were added, aggregating 6.12 miles in length, while 26 sidings were removed, aggregating 2.63 miles; making net increase of 11 sidings, and 3.49 miles.

There were 14.69 miles of track ballasted with gravel laid to a depth of 4 inches.

$32,000.00 were expended in the purchase of 2.12 acres of land at Columbus, Georgia.

$165,935.76 were expended in the construction of a new reinforced concrete outbound freight house, transfer platforms and driveways at Macon, Georgia.

$4,045.73 were expended in moving to Dennis, Georgia, and erecting depot formerly located at East Newnan, Georgia.

Standard passenger shed was erected at East Newnan, Georgia.

$2,857.12 were expended in installing train order signals at Bolingbroke, Forsyth, Goggins, Milner, and Barnesville, Georgia.

1,014 lineal ft. of frame and pile trestles were replaced by embankments and suitable waterways provided.

$25,909.92 were expended in constructing a double 8x10 reinforced concrete box to replace the stone arch near Birmingham, Alabama.

$7,051.14 were expended in widening Elm street bridge, Macon, Georgia.

$2,394.56 were expended in constructing wagon bridge, Eufaula, Alabama.

$1,172.08 were expended for paving at Andalusia, Alabama.

$1,948.92 were expended for paving East Main street, Statesboro, Ga.

$916.05 were expended for paving Broad street, Griffin, Georgia.

$4,175.29 were expended for paving North street, Albany, Georgia.

$936.72 were expended for paving at Troy, Alabama.

$14,291.06 were expended in the purchase of 51 motor cars for use of supervisors, section foremen, and bridge gang foremen.

$48,674.14 were expended in the purchase of 16 electric trucks for handling cotton on Savannah terminals.

$12,744.85 were expended in the purchase of one American Railroad Ditching Machine.

$4,222.06 were expended in the purchase of two rail loading machines.

Contract was let and work commenced on the construction of a reinforced concrete roundhouse and shop at Columbus, Georgia; total expenditure to date of $98,375.40.

$2,317.94 were expended in equipping Macon shops with additional water connections to wash basins.

$2,756.01 were expended in the purchase of one pneumatic flanging machine for Macon shops.

$1,018.60 were expended in the purchase of one electric arc-welding machine for Savannah shops.

$3,955.87 were expended for an electric turntable tractor on turntable at Savannah roundhouse.

Equipment:

Seven new Mountain Type locomotives, built by American Locomotive Company, were used under temporary lease during a portion of the year, and arrangements made for their eventual acquirement by your company under Equipment Trust M. No locomotives were sold or retired. There is an increase over previous year of 314,938 pounds of tractive power, in total locomotives.

Arrangements were made for acquiring under Equipment Trust M, 17 all-steel passenger train cars to be built by The Pullman Company.

$15,917.35 were expended in the application of superheaters, valve gear, piston valves and other improvements to locomotives.

$4,974.07 were expended in additions and betterments to passenger train cars.

There were no freight train cars acquired. 434 freight and work cars were sold, destroyed or retired, and 145 freight train cars were converted to work equipment.

The average capacity of freight cars at the close of the year was 38.0 tons and the total capacity was 336,260 tons.

$19,630.53 were expended in reinforcement of draft gear, application of safety appliances, and other additions and betterments to freight cars.

$39,709.53 were expended in the purchase and converting of Illinois Central sun parlor car into office car.

8. Equipment.

OPERATIONS

To maintain the continuity of historical and statistical data there are included in an appendix the result of operations of your property for the two months under Federal control; six months guaranty period; the four months solely for corporate account operations; and the twelve months' operation.

GENERAL REMARKS

The Board takes pleasure in acknowledging the fidelity, efficiency and united efforts displayed by your officers and employes in the discharge of their duties.

By order of the Board of Directors.

CHARLES H. MARKHAM,
Chairman of the Board.

CENTRAL OF GEORGIA RAILWAY COMPANY

Income Statement

	Years ended December 31			
	1920	Per cent of total operating revenues	1919	+Increase —Decrease
Average miles operated	1,913.63	.....	1,918.29	—4.66
Railway operating revenues—				
I. Transportation—Railline:				
101. Freight	$12,930,928.57	62.54	.....	+$12,930,928.57
102. Passenger	5,728,246.36	27.70	.....	+5,728,246.36
103. Excess baggage	32,090.73	.16	.....	+32,090.73
104. Sleeping car	172,853.08	.84	.....	+172,853.08
105. Parlor and chair car	22,998.23	.11	.....	+22,998.23
106. Mail	470,410.32	2.28	.....	+470,410.32
107. Express	489,307.26	2.37	.....	+489,307.26
108. Other passenger train	7,305.23	.03	.....	+7,305.23
109. Milk	15,813.97	.07	.....	+15,813.97
110. Switching	221,957.02	1.07	.....	+221,957.02
111. Special service train	28,648.75	.14	.....	+28,648.75
Total	$20,120,559.52	97.31	.....	+$20,120,559.52
III. Incidental:				
131. Dining and buffet	$37,136.81	.18	.....	+$37,136.81
132. Hotel and restaurant	2,893.39	.01	.....	+2,893.39
133. Station, train and boat privileges	38,753.64	.19	.....	+38,753.64
134. Parcel room	716.52	.....	.....	+716.52
135. Storage—freight	151,505.89	.73	.....	+151,505.89
136. Storage—baggage	1,380.82	.01	.....	+1,380.82
137. Demurrage	110,342.29	.53	.....	+110,342.29
141. Power	2,562.69	.01	.....	+2,562.69
142. Rents of buildings and other property	1,305.88	.01	.....	+1,305.88
143. Miscellaneous	173,050.88	.84	.....	+173,050.88
Total	$519,648.81	2.51	.....	+$519,648.81
IV. Joint Facility:				
151. Joint facility—Cr.	$36,266.24	.18	.....	+$36,266.24
152. Joint facility—Dr.	76.48	.....	.....	+76.48
Total	$36,342.72	.18	.....	+$36,342.72
Total railway operating revenues	$20,676,551.05	100.00	.....	+$20,676,551.05
Railway operating expenses:				
201-279. Maintenance of way and structures	$4,105,356.85	19.86	.....	+$4,105,356.85
301-337. Maintenance of equipment	5,047,749.43	24.41	.....	+5,047,749.43
351-359. Traffic	550,925.44	2.67	$2,304.16	+548,621.28
371-426. Transportation—rail line	10,512,060.77	50.84	.....	+10,512,060.77
441-446. Miscellaneous operations	43,877.59	.21	.....	+43,877.59
451-462. General	852,654.69	4.12	50,554.81	+802,099.88
451. Transportation for investment—Cr.	R10,256.27	R.05	.....	—10,256.27
Total railway operating expenses	$21,102,368.50	102.06	$52,858.97	+$21,049,509.53
Net revenue from railway operations	R$425,817.45	R2.06	R$52,858.97	—$372,958.48
532. Railway tax accruals	$795,151.18	3.85	$126,929.88	+$668,221.30
533. Uncollectible railway revenues	5,584.69	.02	.....	+5,584.69
Railway operating income	R$1,226,553.32	R5.93	R$179,788.85	—1,046,764.47
502. Revenues from miscellaneous operations	$51,914.33	.25	$72,465.05	—$20,550.72
534. Expenses of miscellaneous operations	43,145.87	.21	59,346.81	—16,200.94
Net revenue from miscellaneous operations	$8,768.46	.04	$13,118.24	—$4,349.78
Total operating income	R$1,217,784.86	R5.89	R$166,670.61	—$1,051,114.25

Non-operating income:	1920	1919	+Increase —Decrease
503. Hire of freight cars—credit balance	$184,620.85	.....	+$184,620.85
504. Rent from locomotives	30,028.44	.....	+30,028.44
505. Rent from passenger train cars	21,684.33	.....	+21,684.33
507. Rent from work equipment	6,972.04	.....	+6,972.04
508. Joint facility rent income	36,250.26	.....	+36,250.26
509. Income from lease of road	778,192.41	$3,454,108.58	—2,675,916.17
510. Miscellaneous rent income	104,003.65	88,227.10	+15,776.55
511. Miscellaneous non-operating physical property	18,850.22	18,665.92	+184.30
513. Dividend income	1,477,825.50	446,171.16	+1,031,654.34
514. Income from funded securities	114,239.76	102,505.87	+11,733.89
515. Income from unfunded securities and accounts	R35,226.73	126,763.08	—161,989.81
519 Miscellaneous income	3,113,268.41	3,307.35	+3,109,061.06
Total non-operating income	$5,849,809.14	$4,239,749.06	+$1,610,060.08
Gross income	$4,632,024.28	$4,073,078.45	+$558,945.83
Deductions from gross income:			
537. Rent for locomotives	$24,017.32	.....	+$24,017.32
538. Rent for passenger train cars	50,274.93	.....	+50,274.93
540. Rent for work equipment	1,676.41	.....	+1,676.41
541. Joint facility rents	119,831.63	.....	+119,831.63
542. Rent for leased roads	370,283.66	$370,085.82	+197.84
543. Miscellaneous rents	135,827.81	146,357.83	—10,530.02
546. Interest on funded debt	2,286,333.75	2,094,953.75	+191,380.00
547. Interest on unfunded debt	80,413.01	147,090.61	—66,677.60
548. Amortization of discount on funded debt	31,570.39	19,194.03	+12,376.36
551. Miscellaneous income charges	15,087.92	12,745.94	+2,341.98
Total deductions from gross income	$3,115,316.83	$2,790,427.98	+$324,888.85
Net income (transferred to credit of profit and loss)	$1,516,707.45	$1,282,650.47	+$234,056.98

[ADVERTISEMENT]

Railway Officers

Executive

George T. Reid, whose appointment as vice-president and western counsel of the Northern Pacific, with headquarters at Tacoma, Wash., was announced in the *Railway Age* of December 10 (page 1177), was born at Etna Green, Indiana, April 2, 1871. He began railroad work on January 6, 1906, in the service of the Portland & Seattle (now the Spokane, Portland & Seattle). He resigned from that position on November 1, 1908, to become a division counsel for the Northern Pacific and on May 23, 1912, he was appointed assistant to the president and western counsel with headquarters at Tacoma, Washington, which position he was holding at the time of his recent promotion.

G. T. Reid

Financial, Legal and Accounting

Albert J. Raynes has been appointed comptroller of the Maine Central, effective December 14, succeeding Arthur P. Foss, assigned to other duties.

Operating

C. B. Ragon has been appointed assistant to the vice-president and general manager of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Texas, effective December 15.

C. C. Barnard, assistant superintendent of the Western division of the Union Pacific with headquarters at Green River, Wyoming, has been appointed acting superintendent with the same headquarters. **H. A. Connett** has been appointed acting assistant superintendent to succeed Mr. Barnard.

Traffic

F. M. Millson has been appointed traffic manager of the Omaha, Lincoln & Beatrice, with headquarters at Lincoln, Neb.

E. H. Golden has been appointed general agent of the Cisco & Northeastern, with headquarters at Breckenridge, Texas.

C. E. Jefferson has been appointed general freight agent of the Canadian Pacific, Western Lines, succeeding W. C. Bowles, promoted.

C. B. Curlee has been appointed general freight agent of the Alabama Northern, with headquarters at Birmingham, Ala., succeeding Roy Pope, resigned.

A. E. Crocker will on January 1 become general agent, freight department, of the New York Central at New Haven, Conn., succeeding **D. A. Gerlach,** granted a leave of absence on account of ill health.

L. H. Trimble, general agent of the El Paso & Southwestern and the Morenci Southern at Phoenix, Ariz., has been transferred in a similar capacity to Los Angeles, Cal., effective January 1. **R. P. Kyle** will succeed Mr. Trimble at Phoenix.

C. E. Stailey, commercial agent of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Kansas City, Mo., has been appointed assistant general freight agent with headquarters at Memphis, Tenn. **Hugh Hardin,** traveling freight and passenger agent at Kansas City will succeed Mr. Stailey.

LeRoy Morris, general agent of the Mississippi Central, with headquarters at Mobile, Ala., has been promoted to the newly created position of assistant general freight agent, with headquarters at Hattiesburg, Miss. Mr. Morris entered railroad service in 1911 as a rate clerk in the local freight office of the Southern Railway, at Selma, Ala., and was later promoted to chief clerk to the division freight agent in the same office. In 1915, he left to become rate clerk in the freight traffic manager's office of the Alabama Great Southern, at Birmingham, Ala. He entered the service of the Mississippi Central on February 1, 1916, as chief clerk to the general freight agent at Hattiesburg, and since that time he has been successively, traveling freight and passenger agent, with headquarters at Hattiesburg, and general agent, with headquarters at Mobile, Ala., which latter position he was holding at the time of his recent promotion.

LeRoy Morris

C. G. Pennington has been appointed assistant general passenger agent of the Long Island, with headquarters at New York City, effective January 1. Mr. Pennington was born at Hollis, Queensboro, New York City, and was educated in the public and business schools of Long Island. He entered the service of the Long Island in 1900 as a clerk in the office of the traffic manager. When this office was abolished in 1902 and separated into the freight and passenger departments, Mr. Pennington went with the latter under the general passenger agent. In 1907 Mr. Pennington took charge of the road's advertising, supervising the preparation of newspaper and magazine advertising, booklets and other literature. During the war and until the demobilization and abandonment of the camps on Long Island, Mr. Pennington's time was devoted almost entirely as representative of the passenger department in connection with the movement of troops.

C. G. Pennington

B. H. Dally, assistant general freight agent of the Pennsylvania, with headquarters at St. Louis, Mo., has been promoted to general freight agent, with the same headquarters, succeeding **P. C. Sprague,** resigned. Mr. Dally will

be succeeded by **F. W. Nash.** These appointments become effective January 1, 1922.

Stanton Curtis, whose appointment as general passenger agent of the Mobile & Ohio, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of December 17 (page 1235), began railroad work in January, 1895, as a clerk to the ticket accountant of the Michigan Central at Detroit, Mich. He held various clerical positions with railroads until January, 1903, when he entered the service of the Southern as a clerk in the general passenger office at Washington, D. C. He was promoted successively to passenger agent at Norfolk, Va., in September, 1905; chief clerk to the assistant general passenger agent at Chicago, in March, 1907; northwestern passenger agent at Chicago, in December, 1909, and assistant general passenger agent, with headquarters at Chicago, in September, 1913. He was transferred to St. Louis in January, 1917, his title being changed to division passenger agent on March 1, 1920, which position he was holding at the time of his recent appointment.

Robert E. Greene, whose appointment as traffic manager of the Salina Northern, with headquarters at Salina, Kan., was announced in the *Railway Age* of November 12 (page 964), was born at Longford, Kan., on February 23, 1872. He entered railroad service in March, 1891, in the maintenance of way department of the Chicago, Rock Island & Pacific. He became a station clerk in 1895, serving in that capacity at various stations on the Kansas and Nebraska divisions until 1896 when he was made agent and operator at Valencia, Kan. He was transferred to Morganville, Kan., in 1899, and promoted to local freight agent at Clay Center, Kan., 1901, which position he held until 1907, when he was promoted to agent in the freight department at Wichita, Kan. He left in 1917 to enter the service of the Salina Northern as agent and dispatcher, with headquarters at Salina. He was promoted to car accountant in 1918 and to general freight and passenger agent in 1919, which position he was holding at the time of his recent promotion.

R. E. Greene

Mechanical

J. D. Young has been appointed acting master mechanic of the Central of New Jersey, with headquarters at Ashley, Pa., succeeding **A. B. Enbody,** who has been granted a leave of absence on account of ill health.

Engineering, Maintenance of Way and Signaling

J. Telford has been appointed roadmaster of the Canadian Pacific, with headquarters at McAdam, New Brunswick, succeeding W. H. Noyes, transferred.

A. C. Harvey, engineer of grade elimination of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been promoted to assistant chief engineer, with the same headquarters and the position of engineer of grade elimination has been abolished.

Purchasing and Stores

G. W. Hanegan, storekeeper of the central and western divisions of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been promoted to general storekeeper, with the same headquarters.

B. W. Griffith, district storekeeper of the New York Central, lines west, with headquarters at Collinwood, Ohio, has been promoted to assistant general storekeeper, with the same headquarters, and will be succeeded by **F. J. McMahon. A. L. Prentice,** division storekeeper, with headquarters at Elkhart, Ind., has been promoted to assistant general storekeeper, with headquarters at Collinwood, and he will be succeeded by **C. F. Heidenreich.**

J. F. McAuley has been appointed division storekeeper of the Portland division of the Southern Pacific, with headquarters at Portland, Ore., succeeding H. J. Smith, who has become chief clerk to the general storekeeper at San Francisco, Cal., succeeding **G. M. Betterton,** promoted. **J. Neph** storekeeper of the San Joaquin division, with headquarters at Bakersfield, Cal., has been transferred to the Los Angeles division, with headquarters at Los Angeles, succeeding J. H. Collins, deceased. He will be succeeded by **J. F. Brown,** storekeeper of the Shasta division, with headquarters at Dunsmuir, Cal., who will be succeeded by **F. L. Doss.**

Obituary

Matthais Manly, since 1905 treasurer of the Norfolk Southern and its predecessors, died on November 28.

John S. Love, general agent of the Chicago, Milwaukee & St. Paul at Milwaukee, Wisconsin, died there on December 20, after a brief illness.

John D. Besler, of the vice-president's staff of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., died suddenly on the evening of December 19 at his home at Galesburg. Mr. Besler was born on April 10, 1833. He entered railroad service in November, 1855, as a track laborer on the Chicago, Burlington & Quincy at Galva, Ill. He was promoted successively to section foreman, conductor of a construction train, roadmaster, assistant division superintendent, division superintendent, and, in 1882, superintendent of the Illinois lines. Three years later (1885) he was promoted to general superintendent, which position he held until August 1, 1902, when he was assigned to special duties on the staff of the vice-president in charge of operation. He was engaged in the latter work at the time of his death. Mr. Besler was the father of W. G. Besler, president and general manager of the Central of New Jersey.

J. D. Besler

THE BULLETIN of the Federation of British Industries states that the Chinese Standardization Commission, which was appointed to agree and fix permanent standards for rolling stock and materials throughout the whole government railway system of China, has now agreed to the standards to be adopted for rails and fastenings; sleepers or ties, both ordinary and for bridges; cuts and fills; formation and ballasting; tunnels; clearance and minimum structure gages. Specifications for bridge steel were also accepted.

As regards rolling stock, standard designs were adopted for heavy locomotives—the Pacific type for passenger and the "Mikado" for freight service—with certain alterations to conform to the views of the locomotive superintendents of the various Chinese government railways. Agreement was also reached on standard designs for wheels, axles, trucks, bodies, frames, etc.